

EXHIBIT 10

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

3M COMPANY and 3M INNOVATIVE
PROPERTIES COMPANY,

Plaintiffs,

vs.

MOLDEX-METRIC, INC.

Defendant.

Court File No.: 12-cv-611-JNE-FLN

DECLARATION OF FELICIA J. BOYD
IN OPPOSITION TO MOLDEX'S
MOTION FOR SUMMARY JUDGMENT
OF NON-INFRINGEMENT OF U.S. PAT.
NO. 6,070,693

I, Felicia J. Boyd, having personal knowledge of the facts stated herein, state as follows:

1. I am one of the attorneys representing 3M Company and 3M Innovative Properties Company (collectively, "3M"). I am submitting this Declaration in support of 3M's Opposition to Defendant's Motion for Summary Judgment of Non-Infringement of U.S. Patent No. 6,070,693.

2. Attached hereto as **Exhibit A** is a true and correct copy of U.S. Patent No. 6,070,693.

3. Attached hereto as **Exhibit B** is a true and correct copy of U.S. Patent No. 7,036,157.

4. Attached hereto as **Exhibit C** is a true and correct copy of the Court's June 14, 2012 Scheduling Order (Doc. 18) entered in this case.

5. Attached hereto as **Exhibit D** is a true and correct copy of Plaintiffs' Complaint for Patent Infringement (Doc. 1) filed March 8, 2012.

6. Attached hereto as **Exhibit E** is a true and correct copy of Exhibit F to Plaintiffs' Infringement Contentions served on Defendant on August 1, 2012 pursuant to the Court's Scheduling Order.

7. Attached hereto as **Exhibit F** is a true and correct copy of promotional materials for Defendant's "BattlePlug" earplug attached as Exhibit D to Plaintiffs' Complaint for Patent Infringement (Doc. 1) filed March 8, 2012.

8. Attached hereto as **Exhibit G** is a true and correct copy of U.S. Patent No. 5,936,208.

9. Attached hereto as **Exhibit H** is a true and correct copy of Defendant's Answer, Affirmative Defenses, and Counterclaims (Doc. 13) filed April 27, 2012.

10. The parties have exchanged written discovery regarding 3M's infringement allegations, but the parties have not yet commenced depositions in this case. Both parties have noticed depositions in this case.

11. 3M believes that additional discovery concerning issues related to 3M's infringement claim under the '693 patent is necessary to oppose Moldex's summary judgment motion. 3M understands that Moldex's production of documents responsive to 3M's discovery requests is ongoing. Further, depositions on infringement issues have not occurred, and 3M has not had the chance to depose Moldex on issues pertaining to the BattlePlug product, including Moldex's argument that the two constrictions in the BattlePlug do not operate as separate filters.

12. Attached hereto as **Exhibit I** is a true and correct copy of the Joint Claim Construction Statement of the Parties and the accompanying Appendix A filed November 1, 2012.

13. Attached hereto as **Exhibit J** is a true and correct copy of 3M's Responsive Prior Art Statement served October 15, 2012.

I declare under penalty of perjury that the foregoing is true and correct.

Dated this 19th day of February, 2013.

By: s/Felicia J. Boyd
Felicia J. Boyd

Exhibit A



US006070693A

United States Patent [19]
Hamery

[11] **Patent Number:** 6,070,693
[45] **Date of Patent:** Jun. 6, 2000

[54] **HEARING PROTECTOR AGAINST LOUD NOISE**

[56] **References Cited**

[75] **Inventor:** Pascal Hamery, Mulhouse, France

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[73] **Assignee:** Institut Franco-Allemand de
Recherches de Saint-Louis,
Saint-Louis, France

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4,852,683 8/1989 Killion .
5,113,967 5/1992 Killion et al. .
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[21] **Appl. No.:** 09/233,192

Primary Examiner—Khanh Dang
Attorney, Agent, or Firm—Oliff & Berridge, PLC

[22] **Filed:** Jan. 20, 1999

[57] **ABSTRACT**

Related U.S. Application Data

[62] **Division of application No.** 08/994,015, Dec. 18, 1997, Pat. No. 5,936,208.

[30] **Foreign Application Priority Data**

Sep. 18, 1997 [FR] France 97.11623

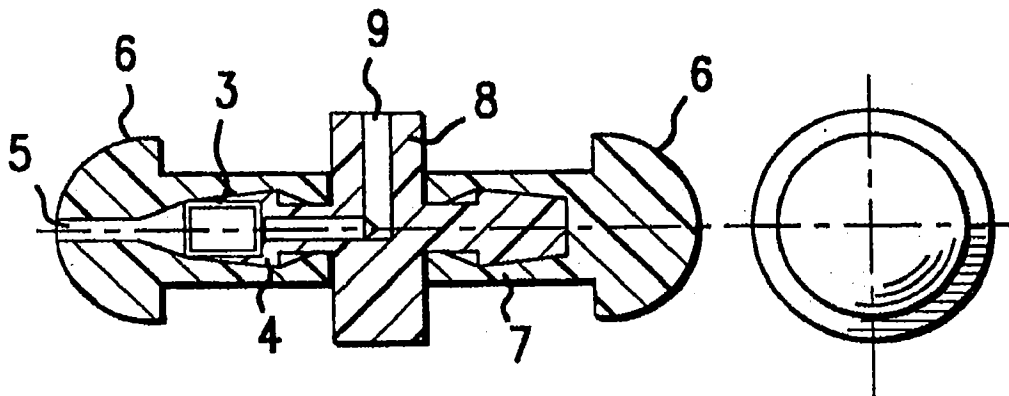
[51] **Int. Cl.⁷** A61B 7/02

[52] **U.S. Cl.** 181/135

[58] **Field of Search** 181/130, 135;
128/864, 867; 2/209

The invention relates to a hearing protector for attenuating, selectively or not, noises that can have an intensity of up to 190 dB, designed to be inserted in sealing fashion into the auditory canal. The hearing protector includes a flexible cylindrical body that has a ferrule at each end. At least one of the two ferrules has a channel that runs from one end of the ferrule to the center of the cylindrical body and contains an acoustic filter. When the two ferrules each contain an acoustic filter, the filters may or may not be identical.

17 Claims, 3 Drawing Sheets



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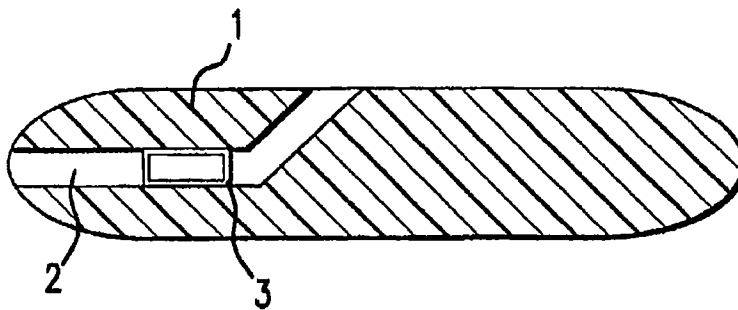


FIG. 1

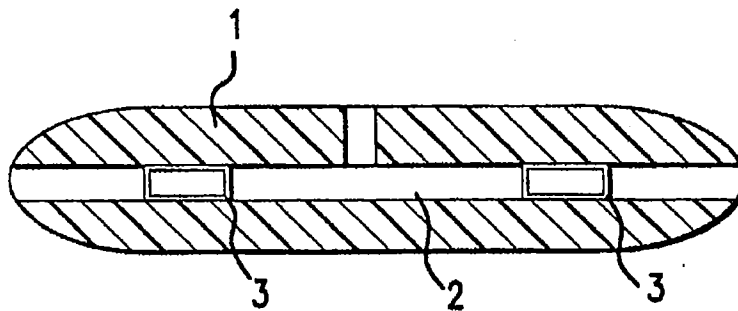


FIG. 2

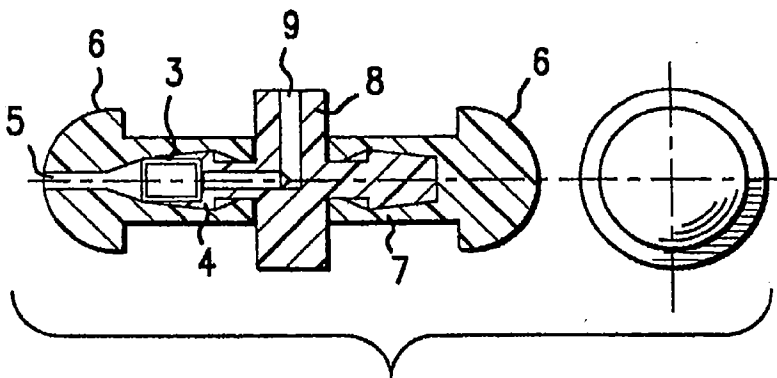


FIG. 3

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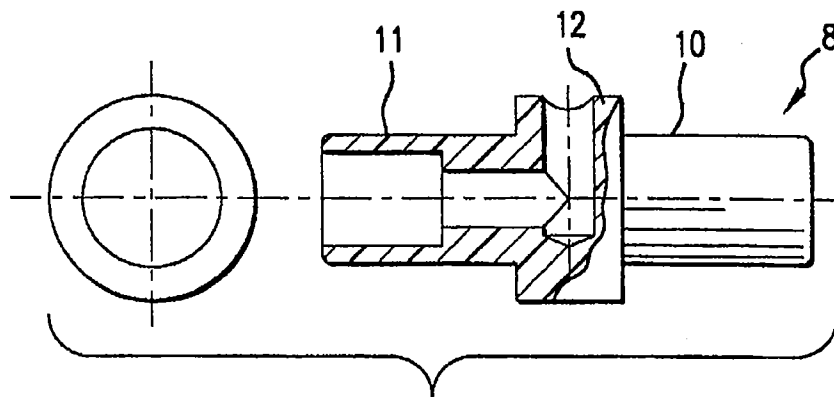


FIG. 4a

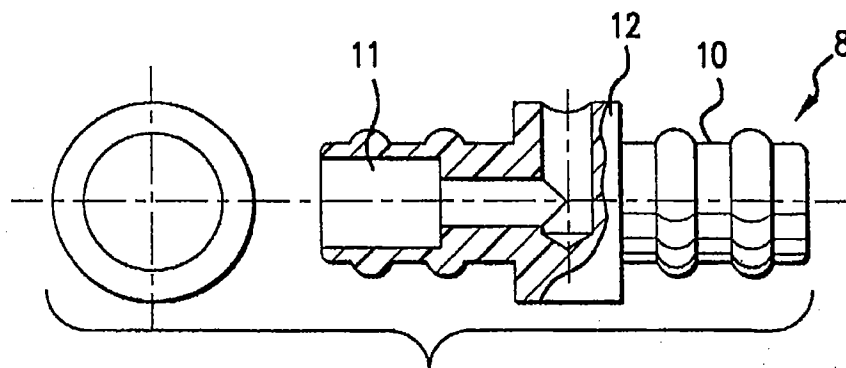


FIG. 4b

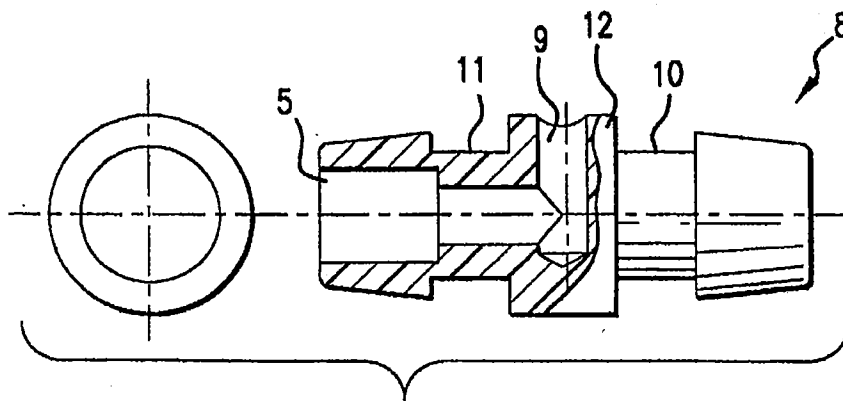


FIG. 4c

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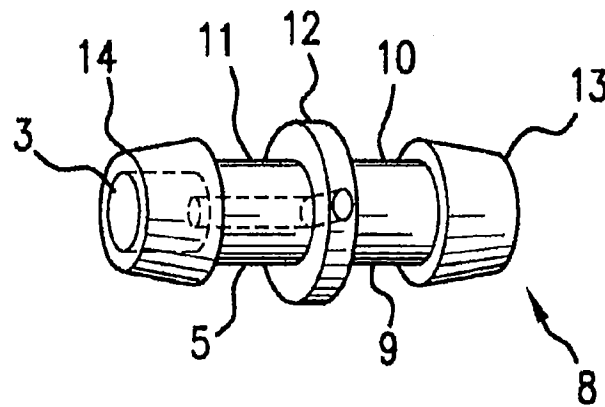


FIG. 5

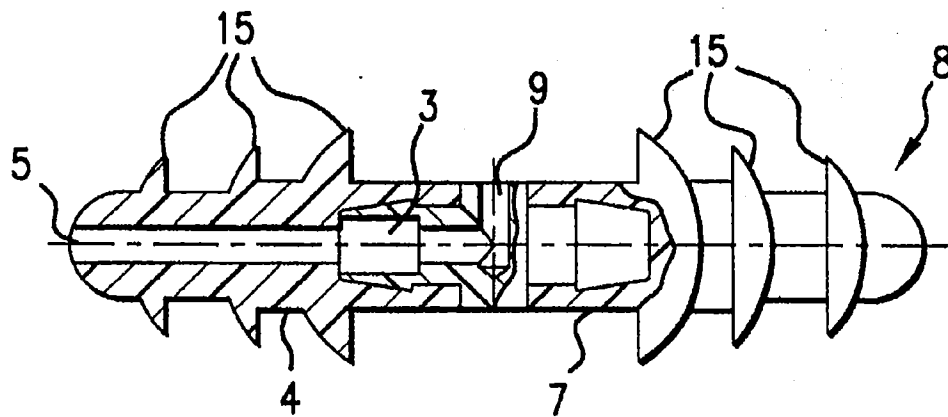


FIG. 6

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HEARING PROTECTOR AGAINST LOUD NOISE

This is a Division of Application Ser. No. 08/994,015 filed Dec. 18, 1997, now U.S. Pat. No. 5,936,208. The entire disclosure of the prior application is hereby incorporated by reference herein in its entirety.

BACKGROUND OF THE INVENTION

1. Field of Invention

The invention relates to hearing protectors, and in particular, the invention relates to a hearing protector to protect against high, continuous or impulsive noises. The hearing protector can function either in a selective attenuation mode or a maximum attenuation mode.

2. Description of Related Art

In the selective attenuation mode, sound attenuation is low for a specific range of frequencies and increases for sounds with frequencies above those in the specified range. Selective attenuation is especially effective for the loudest noises. A sample application of a hearing protector operating in the selective attenuation mode is the intelligible speech transmission in a noisy environment caused by impulsive noises, such as gunshots, for example. In this case, the frequency range in which the attenuation is low is between 100 Hz to 1000 Hz. In the maximum attenuation mode, the hearing protector stops all sounds throughout the frequency range, regardless of their intensity.

French Patent Publication No. 2 676 642, filed in the name of the Applicant, discloses a hearing protector that is not cumbersome and contacts the auditory canal. The protector comprises an elongate flexible body containing selective attenuation means, maximum attenuation means, and a manually controlled plug that makes it possible to choose the attenuation functional mode to be either selective or maximum. However, this device requires careful handling by the user who wants to block the auditory canal himself. This manipulation can be done incorrectly, resulting in inefficient blockage in the selective or maximum attenuation modes.

SUMMARY OF THE INVENTION

The goal of the present invention is to provide a reliable hearing protector that does not suffer from the disadvantage of user adjustment and permits two configurations for noise attenuation that have different characteristics.

Another goal of the present invention is to provide a reliable hearing protector capable of selectively or automatically attenuating noises having intensities up to 190 dB. The hearing protector is intended to be sealingly inserted into the auditory canal of the user. The hearing protector includes a flexible cylindrical body having a ferrule at each end, with at least one of the ferrules having a channel that runs from one end of the ferrule to the center of the body and contains an acoustic filter.

The hearing protector has two ends, both of which can be inserted into the auditory canal and is referred to as a "double-ended" device. This contrasts with the well-known hearing protector that typically has one end that can be inserted into the auditory canal, while the other end allows the hearing protector to be gripped so the user can position it in the auditory canal. The present invention has two ends, that may or may not be identical, either of which can be inserted into the auditory canal, thus making it possible to choose between two operating modes of attenuation that may or may not be identical.

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The device is useful in the fact that it possesses, in the same hearing protector, two configurations that can have different attenuation characteristics, both obtained by simply reversing the direction of the hearing protector, or ear plug, that is inserted into the auditory canal.

In a preferred embodiment, the two ferrules are separate parts linked by an internal connector. The internal connector may be a single cylinder pierced by a channel containing an acoustic filter, the cylinder forming a right angle that terminates at a first end of the channel and a second end at the center of the connector.

The internal connector may also be a single cylinder having a channel that terminates at three locations, such as at the center of the connector or at each end of the connector, with the parts of the channel terminating at the ends containing an acoustic filter that may or may not be identical.

The internal connector may also be composed of three cylindrical parts. The central part may have a channel at its center with a diameter slightly greater than that of the other two parts. The other two parts have a diameter that is essentially equal to or slightly larger than that of the channel. At least one of the two parts is pierced by a channel at its center which contains an acoustic filter and communicates with the channel in the central part. When the two parts each contain an acoustic filter, the filters may or may not be identical.

In an alternate embodiment, the internal connector may have serrations, or ridges, to hold the ferrules in place while in the auditory canal.

In yet another embodiment, the hearing protector may have tapered ends.

Preferably, each ferrule of the hearing protector is provided with an essentially hemispherical face of which the narrower side is intended to be inserted first into the auditory canal.

Advantageously, the body of the hearing protector may be provided with flexible annular fins having a diameter that increases from the inside to the outside of the auditory canal in order to wedgingly secure it in the auditory canal.

The hearing protector makes it possible to perform non-linear sound filtration by choosing the correct acoustic filter.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in conjunction with the following drawings in which like reference numerals designate like elements and wherein:

FIG. 1 is a longitudinal view, in partial section, of a "double-ended" hearing protector according to a preferred embodiment of the present invention;

FIG. 2 is a longitudinal section view of a "double-ended" hearing protector according to a second embodiment of the present invention;

FIG. 3 is a longitudinal section view of a "double-ended" hearing protector according to a third embodiment of the present invention;

FIGS. 4a-4c are longitudinal views, in partial section, of different configurations of the internal connector that join the two ends of the hearing protector according to the present invention;

FIG. 5 is a perspective view of an internal connector for the two ends of the hearing protector according to an embodiment of the present invention;

FIG. 6 is a longitudinal view, in partial section, of a hearing protector according to a fourth embodiment of the present invention.

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DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. 1 is a longitudinal view, in partial section, of the hearing protector according to one preferred embodiment of the present invention. The hearing protector includes a body 1 that is molded to fit in the auditory canal of the user. The body 1 is pierced by a channel 2 that runs from an end of the body 1 and terminates in the center of the body 1. The channel 2 contains an acoustic filter 3 that allows for example the selective and nonlinear filtration of sound. The other end of the body 1 is not perforated and allows maximum attenuation, regardless of the frequency and amplitude of the sound. Ideally, the body 1 has a length between 2 cm and 4 cm and is composed of a flexible material.

FIG. 2 is a longitudinal section view of the hearing protector according to a second embodiment of the present invention. The hearing protector includes a body 1 pierced by a channel 2 that terminates at each end of the body 1, as well as the center of body 1. The channel 2 also contains an acoustic filter 3 at each end. The filters may or may not be identical.

Referring to a third embodiment illustrated in FIG. 3, the hearing protector includes two cylindrical hollow ferrules 4 and 7 and an internal connector 8. The ferrules 4 and 7 are separate pieces that fit into one another and are joined by the internal connector 8 to keep the ferrules 4 and 7 together. Each ferrule 4 and 7 is provided with a substantially hemispherical face 6. The narrower portion of the face 6 is designed to be inserted first into the auditory canal. The substantially hemispherical face 6 ensures tightness between the hearing protector and the auditory canal. As illustrated in FIG. 3, at least one of the two ferrules, in this case, ferrule 4, is pierced by a channel 5 at its center. One of the two ends of the internal connector 8 that contains an acoustic filter 3 is inserted into at least one of the two ferrules 4 and 7. The acoustic filter 3 permits the selective non-linear filtration of sounds. The second ferrule, in this case, ferrule 7, need not be perforated and will allow maximum attenuation regardless of the frequency and amplitude of the sound. The internal connector 8 is pierced by a second channel 9 that connects at a first end with the first channel 5, which contains an acoustic filter 3, allowing for the use of the acoustic filter 3, and at a second end with the center of the connector 8. The second channel 9 is formed at a right angle to the channel 5.

Alternatively, in another embodiment, the internal connector 8 may also have a channel that extends in three locations, the center of the internal connector 8, as well as at each end of the internal connector 8. The portion of the channel that terminates at each end contains an acoustic filter 3 that may or may not be identical.

As shown in FIG. 4a, the internal connector 8 may include a single cylinder consisting of three cylindrical parts 10, 11, and 12. The central part 12 is pierced by a channel 9 at its center and has a diameter that is slightly larger than that of the other two parts 10 and 11. The two parts 10 and 11 have a diameter that is essentially equal to, but slightly larger than that of channel 5 in order to hold the assembly together. At least one of the two parts 10 and 11 is formed with channel 5, which contains an acoustic filter 3 and communicates with channel 9 in the central part 12, as shown in FIG. 5.

The internal connector 8 may have serrations, or ridges, as shown in FIGS. 4b and 6, or the internal connector 8 may have tapered ends 13 and 14, as shown in FIGS. 4c and 5. In the case when the internal connector 8 is in three parts, the

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two parts 10 and 11 will have the serrations, ridges, or tapered ends 13 and 14.

One of the two ferrules has a perforation that, when joined to connector 8, is aligned with that of the central end of channel 9 located in part 12.

FIG. 6 is a longitudinal view, in partial section, of the hearing protector according to a fourth embodiment of the present invention. The hearing protector is provided with flexible annular fins 15 on the ferrules 4 and 7 to wedge the hearing protector against the walls of the auditory canal. The fins 15 may have a diameter that increases from the inside to the outside of the auditory canal.

The hearing protector, according to the present invention, is especially useful for individuals who are exposed to very loud engine and weapon noises, such as the crews of airplanes or military vehicles on exercises, for example. The hearing protector, according to the present invention, can also be used effectively by other personnel exposed to high-intensity noises in their working environments, such as construction sites and quarries for example.

While this invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the preferred embodiments of the invention as set forth herein are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB, the hearing protector being intended to be sealingly inserted into an auditory canal of a user, the hearing protector comprising:

a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter, each of said first and second filters being in communication with one of said first and second ends.

2. The hearing protector according to claim 1, wherein said first and second acoustic filters are identical.

3. The hearing protector according to claim 1, wherein said first and second acoustic filters are not identical.

4. The hearing protector according to claim 1, further having a ferrule at each of said first and second ends wherein said ferrules are separate and said cylindrical body forms an internal connector linking said ferrules.

5. The hearing protector according to claim 4, wherein said internal connector is a single cylinder, said channel forming a right angle and having a first end of said channel containing said first acoustic filter and terminating at at least one of said ferrules and a second end of said channel terminating in said center of said internal connector.

6. The hearing protector according to claim 4, wherein said channel in said internal connector terminates at said center of said internal connector and at said first end and said second end of said internal connector, said first end containing said first acoustic filter and said second end containing said second acoustic filter.

7. The hearing protector according to claim 6, wherein said first acoustic filter is identical to said second acoustic filter.

8. The hearing protector according to claim 6, wherein said first acoustic filter is not identical to said second acoustic filter.

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9. The hearing protector according to claim 4, wherein said internal connector includes a central cylindrical part having a central diameter, a first cylindrical part having a first diameter and a second cylindrical part having a second diameter, said central diameter being larger than said first diameter and said second diameter, said first diameter and said second diameter being larger than said channel, said first cylindrical part containing said first acoustic filter and said second cylindrical part contains said second acoustic filter.

10. The hearing protector according to claim 9, wherein said first acoustic filter and said second acoustic filter are identical.

11. The hearing protector according to claim 9, wherein said first acoustic filter and said second acoustic filter are not identical.

12. The hearing protector according to claim 4, wherein said internal connector has serrations for securing said ferrules to said internal connector.

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13. The hearing protector according to claim 4, wherein said internal connector has ridges for securing said ferrules to said internal connector.

14. The hearing protector according to claim 4, wherein said internal connector has tapered ends.

15. The hearing protector according to claim 1, wherein said ferrules each have an essentially hemispherical face having a narrow side, said narrow sides being designed to be inserted into the auditory canal of the user first.

16. The hearing protector of claim 1, wherein said cylindrical body is provided with annular fins, said fins having a diameter that increases from said first and second ends of said cylindrical body toward said center of said cylindrical body, the hearing protector being wedgingly securable within the auditory canal of the user.

17. The hearing protector according to claim 1, wherein said acoustic filters permit non-linear filtration of sound.

* * * * *

Exhibit B



US007036157B1

(12) **United States Patent**
Andersson et al.

(10) Patent No.: **US 7,036,157 B1**
(45) Date of Patent: **May 2, 2006**

(54) **METHOD OF PRODUCING A HOOD, AND A HOOD PRODUCED ACCORDING TO THE METHOD**

(75) Inventors: **Magnus Andersson, Värnamo (SE); Jan Folkesson, Värnamo (SE)**

(73) Assignee: **Peltor AB, (SE)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 574 days.

(21) Appl. No.: **10/030,505**

(22) PCT Filed: **Jun. 15, 2000**

(86) PCT No.: **PCT/SE00/01248**

§ 371 (c)(1),
(2), (4) Date: **Jun. 3, 2002**

(87) PCT Pub. No.: **WO01/03623**

PCT Pub. Date: **Jan. 18, 2001**

(30) **Foreign Application Priority Data**

Jul. 8, 1999 (SE) 9902643

(51) Int. Cl.
A42B 1/06 (2006.01)

(52) U.S. Cl. 2/209; 2/423; 181/129

(58) Field of Classification Search 2/209, 2/203, 423, 455; 128/864; 181/129; 379/433
See application file for complete search history.

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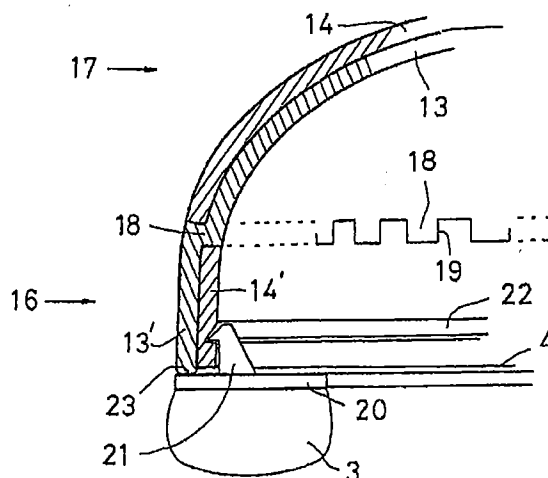
Primary Examiner—Tejash Patel

(74) Attorney, Agent, or Firm—Cantor Colburn LLP

(57) **ABSTRACT**

The disclosure relates to a method of producing a hood for a hearing protector by injection moulding of plastic material. The hood is injection moulded to a single contiguous piece employing at least two plastic materials possessing different properties in at least one respect. The plastic materials may be both homogeneous and in porous or foamed form. A hood for a hearing protector is produced from plastic by injection moulding. The hood includes at least two portions or layers which are united to one another. The portions or layers consist of plastic materials with different properties in at least one respect.

113 Claims, 2 Drawing Sheets



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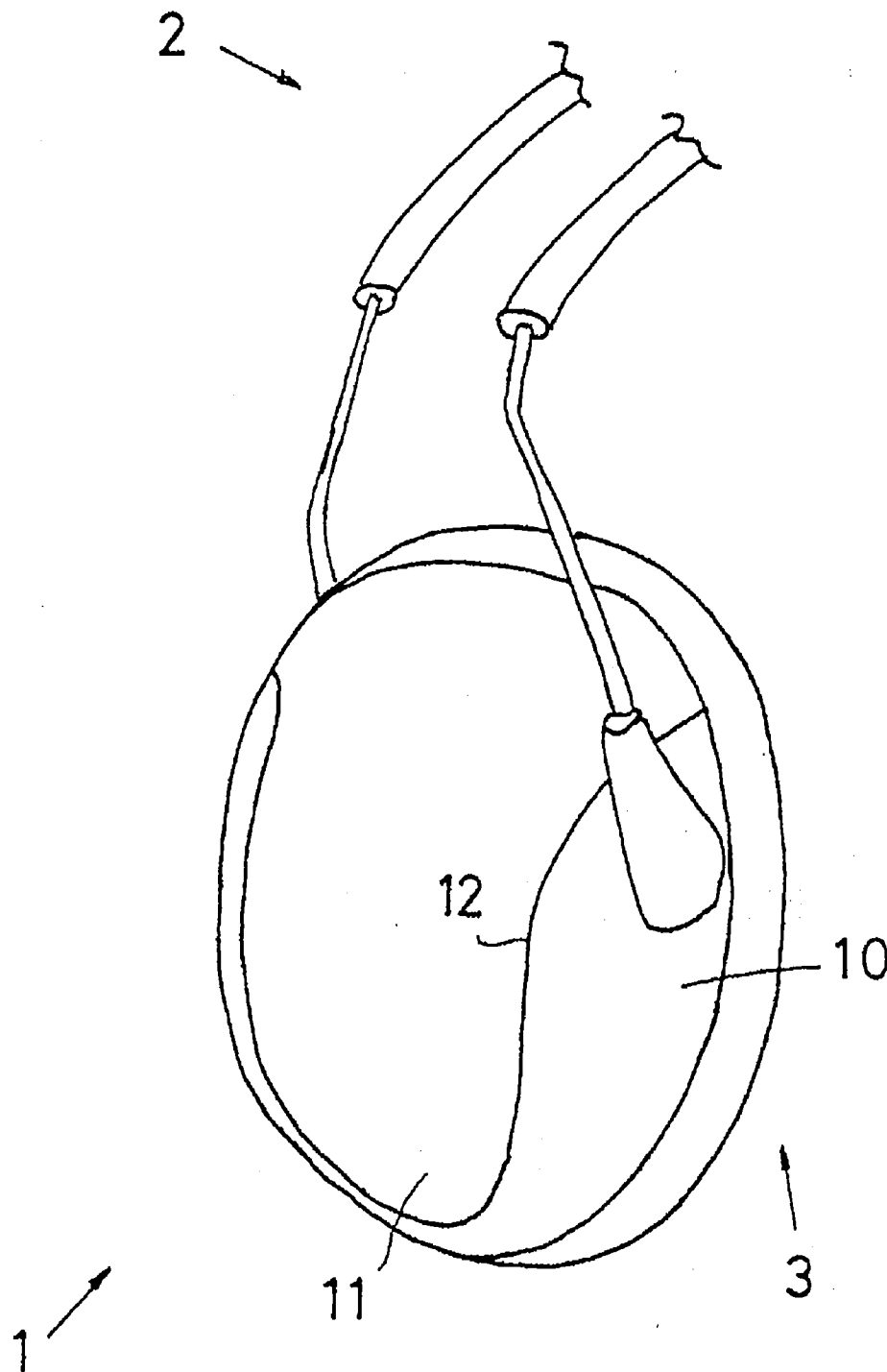


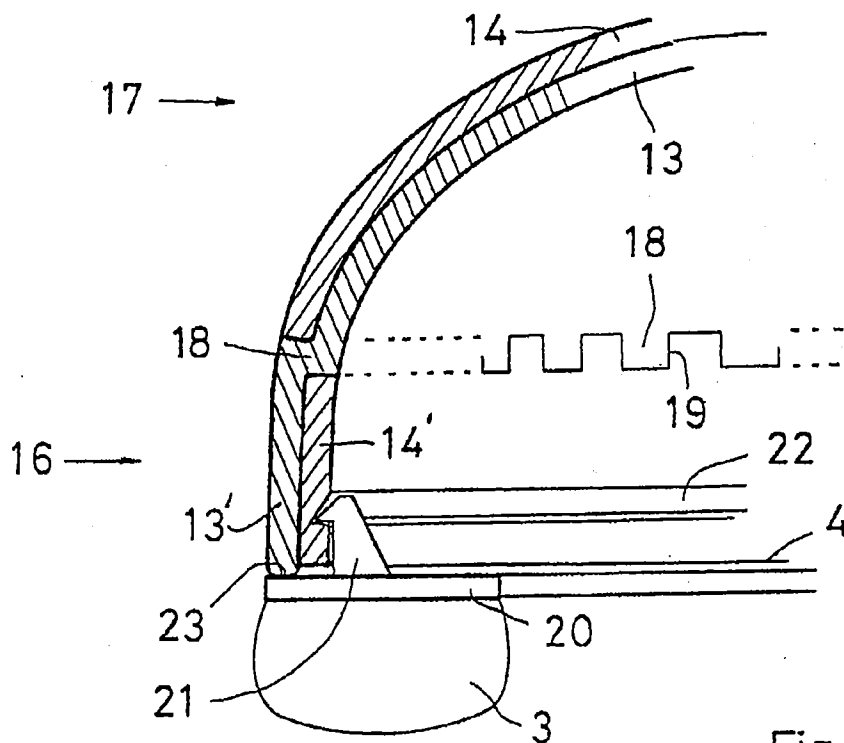
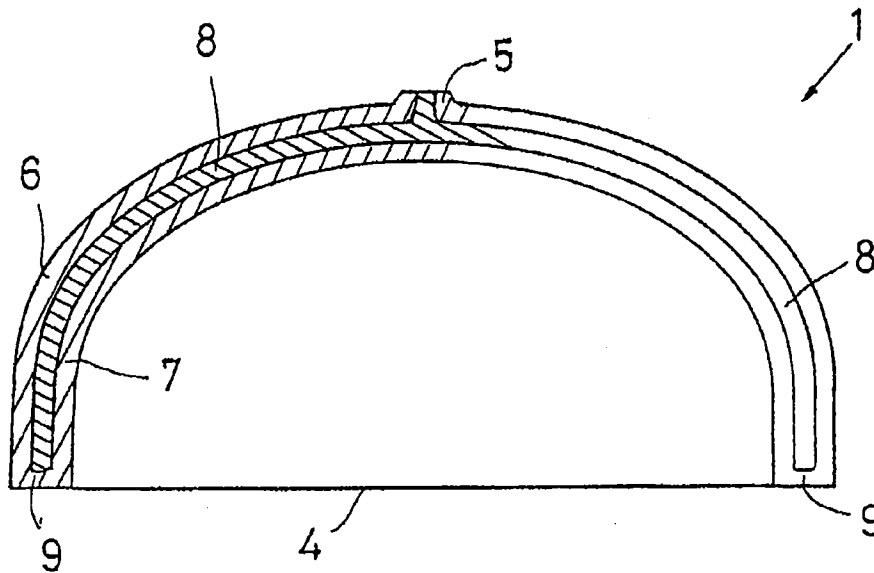
Fig 1

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**METHOD OF PRODUCING A HOOD, AND A
HOOD PRODUCED ACCORDING TO THE
METHOD**

FIELD OF THE INVENTION

The present invention relates to a method of producing a hood for a hearing protector, the hood being produced by injection moulding of plastic material.

The present invention also relates to a hood for a hearing protector in which the hood is produced from plastic by injection moulding.

DESCRIPTION OF THE RELATED ART

A multiplicity of various acoustic hoods are previously known in the art for use in hearing protectors. Such hoods may be simple and consist of a cup-shaped shell injection moulded from plastic which is secured in one end of an arc which is placed over the head of the wearer and which has a similar hood at its opposite end. The hoods are dimensioned to enclose the wearer's ears.

A hood consisting exclusively of a shell is, despite quite complicated configuration, readily subjected to vibrations and oscillations, throughout the entirety of the hood or only locally in it, which implies that the sound-suppression or sound insulation which the hood achieves will be unpredictable and uneven within various frequency ranges.

In order to obviate the above-mentioned problem, various inlays of different sound-absorbing materials have been placed interiorly in the hood. Such solutions also suffer from similar drawbacks.

EP 484 306 discloses a hearing protector in which the hoods have a hard outer shell, inside this a casing of compressed foamed plastic, and inside this casing a further hard hood, which realises compression of the foamed layer lying outside. Interiorly in the inner hood, a sound-absorbent material is then placed.

Such a construction functions considerably better than the above-described construction consisting merely of a shell which is provided interiorly with a sound-absorbent. However, the construction is not optimal, either as regards rational production or sound-suppression/sound-insulation.

Similar constructions are also known from USPS 2 684 067, DE 3 441 120, DE 3 441 122, and others.

For a hood to be as favourable as possible in a hearing protector, the material in the hood should be "as dead as possible" so that it has a very slight ability to be excited into oscillation movements both as an entity and also locally.

SUMMARY OF THE INVENTION

The present invention provides a method of manufacturing a hood which obviates the drawbacks inherent in hoods according to prior art technology, and in particular improves the sound-suppression capability of the hood. The present invention further provides extremely rational production of hoods, at the same time as these can be given an extremely aesthetically attractive appearance.

The present invention also obviates the drawbacks inherent in prior art designs and constructions, and in particular improves the sound-suppression capability of the hood. Finally, the present invention provides a hood such that it may be manufactured economically and rationally in large series and that it may be given an aesthetically attractive exterior.

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More specifically, the invention provides a hood that is injection moulded to one single continuous piece using plastic materials with different properties in at least one respect.

As regards the hood, the objects of the present invention will be attained if the hood is characterised in that it includes at least two mutually contiguous portions or layers which consist of plastic material with different properties in at least one respect.

By injection moulding of a hood where different portions are included in the hood, and where the injection moulded plastic material or materials have different properties in at least one respect, a hood will be realised which suffers from considerably less of a risk of being subjected to resonance oscillations both locally and for the hood as an entity. The hood will have improved sound-suppression capability.

Further, the possibility is afforded of extremely rational manufacture.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described in greater detail hereinbelow, with particular reference to the accompanying Drawings. In the accompanying Drawings:

FIG. 1 is a perspective view of a part of a hearing protector employing a hood according to the present invention;

FIG. 2 is a cross section through a first embodiment of a hood according to the present invention; and

FIG. 3 is a partial cross sectional, on a larger scale, of a second embodiment of a hood according to the present invention.

**DETAILED DESCRIPTION OF THE
INVENTION**

The basic concept behind the present invention is that there should be included, in one and the same hearing protector hood, at least two portions where the material in each portion differs in one way or another as regards oscillation from the material in the other portion or in the remaining portions. Differences which will be topical for consideration here are differences in density, differences in hardness, differences in modulus of elasticity, differences in structure, for example differences between homogeneous and porous plastic materials, differences between plastic materials with open or closed foamed structure, differences between plastic materials with and without different types of fillers, etc. As examples of usable plastics, mention might be made of ABS plastic, polypropylene, polyethylene and polycarbon plastics, TPE, etc.

The concept which lies behind the present invention takes as its point of departure the fact that a sound wave, i.e. a mechanical oscillation movement, which propagates in a body will at least partly be reflected and refracted when it impinges on an interface between materials with different properties. The reflected and refracted parts of the sound wave will interfere with each other and with the original sound wave, with a diffusion and attenuation of the sound wave as a result. This phenomenon becomes more manifest the higher the frequency the sound wave has.

If one considers a body, e.g. a hood included in a hearing protector, its oscillation properties are determined by material properties, configuration and dimensions. Different materials oscillate at different frequencies if the remaining properties remain constant. If two bodies which oscillate at different frequencies (e.g. depending upon different material

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properties in the bodies) are mechanically interconnected, the different oscillations will inhibit one another, whereby resonances are obstructed or reduced.

In FIG. 1, reference numeral 1 relates to a hood included in a hearing protector, the hood being pivotally secured in a stirrup 2 which is intended to extend over the head of the wearer of the hearing protector. On the side of the hood 1 facing towards the wearer's head, there is provided an abutment ring 3 which is produced from soft, resilient and yieldable material so that it may form itself according to the head of the person wearing the hearing protector, and thereby realise a seal between the interior of the hood, round the ear of the wearer and the ambient surroundings.

When the word "hood" is employed below and in the appended claims, this refers exclusively to the hood proper without loosely inserted damping material or other equipment and also without the above-mentioned abutment ring.

In the embodiment according to FIG. 2, the hood 1 is produced by injection moulding in accordance with the sandwich method. The hood 1 has a peripheral edge 4 facing towards the wearer's head and along which the above-mentioned-abutment ring 3 is secured.

On its outside, the hood 1 has a sprue 5 via which molten plastic material is injected in under high pressure into the mould in which the hood 1 is produced. According to the sandwich method, a first plastic material which is to form the outer casing 6 of the hood and its inner casing 7 is injected in first. When injection of this first plastic material is completed, the injection continues with a second plastic material which is injected interiorly in the material which formed the outer casing and the inner casing. The first and second plastic materials have different material properties in at least one respect, such as density, hardness, etc. The second plastic material forms an intermediate layer 8 between the outer casing 6 and the inner casing 7. It should be observed that the outer casing 6 and the inner casing 7 have a connecting bridge 9 along the peripheral edge 4 of the hood 1. As a result, the material in the intermediate layer 8 will in principle be totally enclosed between the outer casing and the inner casing, possibly apart from the region at the sprue 5.

On injection moulding according to the sandwich method, the plastic material for the outer casing and the inner casing is fed to the moulding tool via a first feeder screw included in the injection moulding machine. A second feeder screw is employed for injecting the second material for the intermediate layer 8, in which event the tool may either have two separate inlets, one for each screw, or the tool may also be switched from a position for injection via the first screw to a position for injection via the second screw.

In the embodiment according to FIG. 1, the hood 1 has an outer, peripheral portion 10 which extends along the periphery of the hood apart from in its upper region. The bottom of the hood, i.e. substantially its central region, and its upper region are formed from a central portion 11 which is discrete from the outer portion 10 via a separation line 12 which, in practice, is only visual since the material in the outer portion 10 and the central portion 11 in principle form a single, contiguous piece where the different portions have materials with different properties.

In one variation of the embodiment according to FIG. 1, the outer portion 10 has a through-going material thickness such that the hood 1 has the same material externally and internally within the region which is defined by the outer portion 10. The corresponding feature naturally applies to the central portion 11. In another variation of the embodiment according to FIG. 1, the material within the outer

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portion 10 is double, with an outer layer which has a free surface on the outside of the hood, and an inner layer whose material differs from the material in the outer layer. The corresponding applies to the central portion 11, but however the materials in the outer and inner layers have been reversed, so that the material in the outer layer of the outer portion lies on the inside of the central portion 11, while the material in the outer layer within the central portion 11 lies on the inside of the outer layer in the outer portion 10. In the region of the separation line 12, the layers have mutually corresponding apertures and bridges, which will be illustrated more clearly with reference to FIG. 3.

FIG. 3 shows a duplex layer construction where the division between the layers may have any optionally formed separation lines which can define considerably more different regions than applies in FIG. 1, where only two different regions are shown.

In the embodiment according to FIG. 3, the shell 1 has, in its upper region in the Figure, a soft inner layer 13 and a hard outer layer 14. The two layers 13 and 14 are united to one another in a union interface where the materials have been caused to adhere powerfully to one another, possibly by fusion, during the injection moulding cycle proper. In the lower region of the embodiment according to FIG. 3, the soft material is outermost and forms an external band 13' along the peripheral edge 4 of the hood 1. On the inside of this external band 13', the hard material is located and there forms an inner band 14'.

The transition region between the edge area 16 of the hood 1 and its cupola area 17 includes alternately disposed bridges 18 and complementary apertures 19 accommodating the bridges 19.

As will be apparent from FIG. 1, an abutment ring 3 extends along the peripheral edge 4 of the hood 1. This has a carrier ring 20 with catches 21 or a circumferential ring for snapping into a groove 22 in the inside of the inner, hard band 14'. For the satisfactory function of the hearing protector, it is of vital importance that a good seal is obtained, on the one hand, between the interior of the hood 1 and the abutment ring 3 and, on the other hand, between the abutment ring 3 and the head of the wearer of the hearing protector. In the embodiment illustrated in FIG. 3, the outer, soft band 13' has been given the form of a seal 23 which abuts elastically compressed against the upper side of the carrier ring 20.

The division between the portions 10 and 11 of the hood 1 shown in FIG. 1 has been made merely for purposes of exemplification. Aesthetic considerations may be made in this design, without appreciably affecting the acoustic properties of the hood. On the other hand, it might possibly be expected that a division into more than two different contiguous portions may have a favourable effect on the acoustic properties of the hood.

What is claimed is:

1. A method of producing a hood for a hearing protector, comprising: injection molding of plastic material into a single contiguous piece employing plastic materials with different properties in at least one respect wherein said single contiguous piece includes at least two contiguous portions, the hood having an outer surface and an inner surface, said at least two contiguous portions being visible on said outer surface, and wherein one of said at least two contiguous portions comprises a central portion and another of said at least two contiguous portions at least partially surrounds said central portion.

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2. The method as claimed in claim 1, wherein the plastic materials are employed in both homogeneous and in porous or foamed form.

3. The method as claimed in claim 1, wherein at least two different plastic materials are employed.

4. The method as claimed in claim 3, wherein plastic materials of different densities are employed.

5. The method as claimed in claim 3, wherein plastic materials of different hardnesses are employed.

6. The method as claimed in claim 3, wherein plastic materials with different moduli of elasticity are employed.

7. A hood for a hearing protector produced from plastic by injection molding, comprising:

at least two mutually contiguous portions which comprise plastic materials with different properties in at least one respect wherein the hood has an outer surface and an inner surface, said at least two contiguous portions being visible on said outer surface, a separation line separating said at least two contiguous portions, and wherein one of said at least two contiguous portions comprises a central portion and another of said at least two contiguous portions at least partially surrounds said central portion.

8. The hood as claimed in claim 7, wherein at least one portion comprises a different plastic material than another portion.

9. The hood as claimed in claim 7, wherein a portion is disposed along a peripheral edge of the hood, is produced from a soft and elastic material, and is designed for sealing against an abutment ring which is disposed along the peripheral edge of the hood and designed to abut against a head of a wearer of the hearing protector in which the hood is included.

10. The method as claimed in claim 1 wherein one of said at least two contiguous portions comprises a softer plastic than the other of said contiguous portions.

11. The method as claimed in claim 1 including an abutment ring attached to said hood.

12. The hood as claimed in claim 7 wherein one of said at least two contiguous portions comprises a softer plastic than the other of said contiguous portions.

13. The hood as claimed in claim 7 including an abutment ring attached to said hood.

14. A hood for a hearing protector comprising:

at least two mutually contiguous portions which comprise plastic materials with different properties in at least one respect; and

wherein the hood has an outer surface and an inner surface, said at least two contiguous portions being visible on said outer surface, a separation line separating said at least two contiguous portions, and wherein one of said at least two contiguous portions comprises a central portion and another of said at least two contiguous portions at least partially surrounding said central portion.

15. The hood as claimed in claim 14, wherein at least one portion comprises a different plastic material than another portion.

16. The hood as claimed in claim 14, wherein a portion is disposed along a peripheral edge of the hood, is produced from a soft and elastic material, and is designed for sealing against an abutment ring which is disposed along the peripheral edge of the hood and designed to abut against a head of a wearer of the hearing protector in which the hood is included.

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17. The hood as claimed in claim 14 wherein one of said at least two contiguous portions comprises a softer plastic than the other of said contiguous portions.

18. The hood as claimed in claim 14 including an abutment ring attached to said hood.

19. A method of producing a hood for a hearing protector, the hood having an outer surface and an inner surface, comprising:

injection molding a first plastic material to form a first portion;

injection molding a second plastic material to form a second portion, said first and second portions being mutually contiguous to each other to define a single contiguous hood, said first and second portions being separated by a separation line which is visible on said outer surface of said hood, said first portion comprising a central portion and said second portion at least partially surrounding said central portion, said first plastic material having different properties in at least one respect from said second plastic material and wherein one of said first or second plastic materials is softer relative to the other of said first or second plastic materials.

20. A hood for a hearing protector produced from plastic injection molding comprising:

a first portion formed from injection molding a first plastic material;

a second portion formed from injection molding a second plastic material;

said first and second portions being mutually contiguous to each other to define a single contiguous hood, said first and second portions being separated by a separation line which is visible on said outer surface of said hood, said first portion comprising a central portion and said second portion at least partially surrounding said central portion, said first plastic material having different properties in at least one respect from said second plastic material and wherein one of said first or second plastic materials is softer relative to the other of said first or second plastic materials.

21. A hood for a hearing protector comprising:

a first portion formed from a first plastic material;

a second portion formed from a second plastic material;

said first and second portions being mutually contiguous to each other to define a single contiguous hood, said first and second portions being separated by a separation line which is visible on said outer surface of said hood, said first portion comprising a central portion and said second portion at least partially surrounding said central portion, said first plastic material having different properties in at least one respect from said second plastic material and wherein one of said first or second plastic materials is softer relative to the other of said first or second plastic materials.

22. A method of producing a hearing protector comprising a hood and an abutment ring, the abutment ring being disposed along a peripheral edge of the hood, the abutment ring intended to abut against the head of a wearer of the hearing protector in which the hood is included, wherein the hood is produced by a method, comprising:

injection molding of plastic material into a single contiguous piece employing plastic materials with different properties in at least one respect.

23. The method as claimed in claim 22, wherein the plastic materials are employed in both homogeneous and in porous or foamed form.

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24. The method as claimed in claim 22, wherein at least two different plastic materials are employed.

25. The method as claimed in claim 24, wherein plastic materials of different densities are employed.

26. The method as claimed in claim 24, wherein plastic materials of different hardnesses are employed.

27. The method as claimed in claim 24, wherein plastic materials with different modulus of elasticity are employed.

28. The method as claimed in claim 22 wherein the single contiguous piece includes at least two contiguous portions.

29. The method as claimed in claim 28 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

30. The method as claimed in claim 29 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

31. The method as claimed in claim 30 wherein one of said at least two contiguous portions comprise a central portion and another of said at least two contiguous portions at least partially surrounds said central portion.

32. The method as claimed in claim 30 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

33. A hearing protector comprising a hood and an abutment ring, the abutment ring being disposed along a peripheral edge of the hood, the abutment ring intended to abut against the head of a wearer of the hearing protector in which the hood is included, wherein the hood is produced from plastic by injection molding, comprising:

at least two mutually contiguous portions which comprise first and second plastic made of different materials and with different properties in at least one respect.

34. The hearing protector as claimed in claim 33, wherein the portions include an outer and an inner layer of a first plastic material with a first group of properties and an intermediate layer located therebetween and comprising a second plastic material with a second group of properties.

35. The hearing protector as claimed in claim 34, wherein the outer and inner layers have a hardness greater than the intermediate layer.

36. The hearing protector as claimed in claim 35, wherein the intermediate layer has a hardness greater than the outer and inner layers.

37. The hearing protector as claimed in claim 33, wherein the portions include two material layers, of which at least one has surfaces which are free towards both an outside and an inside of the hood.

38. The hearing protector as claimed in claim 33, wherein the portions include two material layers which both have surfaces which are free towards an outside of the hood and surfaces which are free towards the inside of the hood.

39. The hearing protector as claimed in claim 33, wherein at least one portion comprises a different plastic material than another portion.

40. The hearing protector as claimed in claim 33 wherein a contiguous portion disposed along said peripheral edge of the hood is produced from a soft and elastic material and is designed for sealing against said abutment ring.

41. The hearing protector as claimed in claim 35, wherein the intermediate layer has a foam structure.

42. The hearing protector as claimed in claim 36, wherein the outer and inner layers have a foam structure.

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43. The hearing protector as claimed in claim 33 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

44. The hearing protector as claimed in claim 43 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

45. The hearing protector as claimed in claim 44 wherein one of said at least two portions comprise a central portion and another of said at least two portions at least partially surrounds said central portion.

46. The hearing protector as claimed in claim 44 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

47. A hearing protector comprising a hood and an abutment ring, the abutment ring being disposed along a peripheral edge of the hood, the abutment ring intended to abut against the head of a wearer of the hearing protector in which the hood is included, wherein the hood comprises:

at least two mutually contiguous portions which comprise first and second plastic made of different materials and with different properties in at least one respect.

48. The hearing protector as claimed in claim 47, wherein the portions include an outer and an inner layer of a first plastic material with a first group of properties and an intermediate layer located therebetween and comprising a second plastic material with a second group of properties.

49. The hearing protector as claimed in claim 48, wherein the outer and inner layers have a hardness greater than the intermediate layer.

50. The hearing protector as claimed in claim 48, wherein the intermediate layer has a hardness greater than the outer and inner layers.

51. The hearing protector as claimed in claim 47, wherein the portions include two material layers, of which at least one has surfaces which are free towards both an outside and an inside of the hood.

52. The hearing protector as claimed in claim 47, wherein the portions include two material layers which both have surfaces which are free towards an outside of the hood and surfaces which are free towards the inside of the hood.

53. The hearing protector as claimed in claim 47, wherein at least one portion comprises a different plastic material than another portion.

54. The hearing protector as claimed in claim 47, wherein a contiguous portion disposed along said peripheral edge of the hood is produced from a soft and elastic material and is designed for sealing against said abutment.

55. The hearing protector as claimed in claim 49, wherein the intermediate layer has a foam structure.

56. The hearing protector as claimed in claim 50, wherein the outer and inner layers have a foam structure.

57. The hearing protector as claimed in claim 47 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

58. The hearing protector as claimed in claim 57 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

59. The hearing protector as claimed in claim 58 wherein one of said portions comprise a central portion and another of said portions at least partially surrounds said central portion.

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60. The hearing protector as claimed in claim 58 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

61. A method of producing a hood intended for use with a hearing protector where the hearing protector comprises a hood and an abutment ring, the abutment ring intended to be disposed along a peripheral edge of the hood, wherein the hood is produced by a method consisting essentially of injection molding of plastic material into a single contiguous piece employing plastic materials with different properties in at least one respect.

62. The method as claimed in claim 61, wherein the plastic materials are employed in both homogeneous and in porous or foamed form.

63. The method as claimed in claim 61, wherein at least two different plastic materials are employed.

64. The method as claimed in claim 63, wherein plastic materials of different densities are employed.

65. The method as claimed in claim 63, wherein plastic materials of different hardnesses are employed.

66. The method as claimed in claim 63, wherein plastic materials with different modulus of elasticity are employed.

67. The method as claimed in claim 61 wherein the single contiguous piece includes at least two contiguous portions.

68. The method as claimed in claim 67 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

69. The method as claimed in claim 68 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

70. The method as claimed in claim 69 wherein one of said at least two contiguous portions comprise a central portion and another of said at least two contiguous portions at least partially surrounds said central portion.

71. The method as claimed in claim 69 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

72. A hood intended for use with a hearing protector, the hearing protector comprising a hood and an abutment ring, the abutment ring intended to be disposed along a peripheral edge of the hood, wherein the hood is produced from plastic by injection molding, consisting essentially of:

at least two mutually contiguous portions which comprise plastic materials with different properties in at least one respect.

73. The hood as claimed in claim 72, wherein the portions include an outer and an inner layer of a first plastic material with a first group of properties and an intermediate layer located therebetween and comprising a second plastic material with a second group of properties.

74. The hood as claimed in claim 73, wherein the outer and inner layers have a hardness greater than the intermediate layer.

75. The hood as claimed in claim 74, wherein the intermediate layer has a hardness greater than the outer and inner layers.

76. The hood as claimed in claim 72, wherein the portions include two material layers, of which at least one has surfaces which are free towards both an outside and an inside of the hood.

77. The hood as claimed in claim 72, wherein the portions include two material layers which both have surfaces which are free towards an outside of the hood and surfaces which are free towards the inside of the hood.

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78. The hood as claimed in claim 72, wherein at least one portion comprises a different plastic material than another portion.

79. The hood as claimed in claim 72 wherein a contiguous portion disposed along said peripheral edge of the hood is produced from a soft and elastic material and is designed for sealing against said abutment ring.

80. The hood as claimed in claim 74, wherein the intermediate layer has a foam structure.

81. The hood as claimed in claim 75, wherein the outer and inner layers have a foam structure.

82. The hood as claimed in claim 72 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

83. The hood as claimed in claim 82 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

84. The hood as claimed in claim 83 wherein one of said at least two portions comprise a central portion and another of said at least two portions at least partially surrounds said central portion.

85. The hood as claimed in claim 83 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

86. A hood intended for use with a hearing protector, the hearing protector comprising a hood and an abutment ring, the abutment ring intended to be disposed along a peripheral edge of the hood, wherein the hood consists essentially of: at least two mutually contiguous portions which comprise plastic materials with different properties in at least one respect.

87. The hood as claimed in claim 86, wherein the portions include an outer and an inner layer of a first plastic material with a first group of properties and an intermediate layer located therebetween and comprising a second plastic material with a second group of properties.

88. The hood as claimed in claim 87, wherein the outer and inner layers have a hardness greater than the intermediate layer.

89. The hood as claimed in claim 87, wherein the intermediate layer has a hardness greater than the outer and inner layers.

90. The hood as claimed in claim 86, wherein the portions include two material layers, of which at least one has surfaces which are free towards both an outside and an inside of the hood.

91. The hood as claimed in claim 86, wherein the portions include two material layers which both have surfaces which are free towards an outside of the hood and surfaces which are free towards the inside of the hood.

92. The hood as claimed in claim 86, wherein at least one portion comprises a different plastic material than another portion.

93. The hood as claimed in claim 86, wherein a contiguous portion disposed along said peripheral edge of the hood is produced from a soft and elastic material and is designed for sealing against said abutment.

94. The hood as claimed in claim 88, wherein the intermediate layer has a foam structure.

95. The hood as claimed in claim 89, wherein the outer and inner layers have a foam structure.

96. The hood as claimed in claim 86 wherein the hood has an outer surface and an inner surface and wherein said at least two contiguous portions are visible on said outer surface.

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97. The hood as claimed in claim 96 wherein a separation line separates said at least two contiguous portions visible on said outer surface.

98. The hood as claimed in claim 97 wherein one of said portions comprise a central portion and another of said portions at least partially surrounds said central portion. 5

99. The hood as claimed in claim 97 including two of said contiguous portions wherein one of said portions comprises a softer plastic than the other of said contiguous portions.

100. A method of producing a hood for a hearing protector, comprising:

injection molding the hood from plastic materials to form a single piece having at least two contiguous portions, the plastic materials adhering to one another during the inject molding process, the plastic materials having different properties in at least one respect so as to improve the sound suppression capability of the hood by sound wave interference at an interface between the at least two contiguous portions. 15

101. The method as claimed in claim 100 wherein the plastic materials are employed in both homogeneous and in porous or foamed form. 20

102. The method as claimed in claim 100 wherein at least two different plastic materials are employed.

103. The method as claimed in claim 102 wherein plastic materials of different densities are employed. 25

104. The method as claimed in claim 102 wherein plastic materials of different hardnesses are employed.

105. The method as claimed in claim 102 wherein plastic materials with different modulus of elasticity are employed. 30

106. A hood for a hearing protector, the hood being produced from plastic by injection molding, wherein the hood includes at least two mutually contiguous portions or layers which consist of plastic materials, the plastic materials adhering to one another during the injection molding

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cycle, with the plastic materials having different properties in at least one respect so as to improve the sound-suppression capability of the hood by sound wave interference at an interface between the contiguous portions or layers.

107. The hood as claimed in claim 106 wherein the portions include an outer and an inner layer of a plastic material with a first group of properties and an intermediate layer located therebetween, the intermediate layer comprising a plastic material with a second group of properties.

108. The hood as claimed in claim 107 wherein the outer and inner layers are relatively hard, while the intermediate layer is softer or has a foamed structure.

109. The hood as claimed in claim 107 wherein the intermediate layer is relatively hard while the outer and inner layers are softer or have a foamed structure.

110. The hood as claimed in claim 106 wherein the portions include two material layers, of which at least one has surfaces which are exposed to both the outside of the hood and to the inside of the hood.

111. The hood as claimed in claim 106 wherein the portions include two material layers which both have surfaces which are exposed to the outside of the hood and surfaces which are exposed to the inside of the hood.

112. The hood as claimed in claim 106 wherein at least one of the portions or layers comprised a different plastic material than the other portion or layers.

113. The hood as claimed in claim 106 wherein a portion is disposed along the peripheral edge of the hood, wherein such portion is produced from a soft and elastic material and is intended to seal against an abutment ring which is disposed along a peripheral edge of the hood, the abutment ring intended to abut against the head of the wearer of the hearing protector in which the hood is included.

* * * * *

Exhibit C

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

3M Company and 3M Innovative
Properties Company,

Civil 12-611 JNE/FLN

Plaintiffs,

v.

SCHEDULING ORDER

Moldex-Metric, Inc.,

Defendant.

Pursuant to Rule 16 of the Federal Rules of Civil Procedure and the Local Rules of this Court, and in order to secure the just, speedy, and inexpensive determination of this action, the following schedule shall govern this proceeding. The schedule may be modified only upon formal motion and a showing of good cause as required by Local Rule 16.3.

A. PLEADINGS:

1. All hearings on motions to amend and/or add parties to the action shall be heard August 1, 2012.
2. Discovery and Pleading of Additional Claims and Defenses:
 - (a) Discovery is permitted with respect to claims of willful infringement and defenses of patent invalidity or unenforceability not pleaded by a party, where the evidence needed to support these claims or defenses is in whole or in part in the hands of another party.
 - (b) Once a party has given the necessary discovery, the opposing party may seek leave of Court to add claims or defenses for which it alleges, consistent with Fed.R.Civ.P. 11, that it has support, and such support shall be explained in the motion seeking leave. Leave shall be liberally given where prima facie support is present, provided that the party seeks leave as soon as reasonably possible following the opposing party providing the necessary discovery.

B. FACT DISCOVERY

1. All pre-discovery disclosures required by Fed.R.Civ.P. 26(a) shall be completed on or before July 1, 2012.
2. Fact discovery shall be commenced in time to be completed by April 1, 2013.
3. The Court will limit the use and numbers of discovery procedures as follows:
 - a) No more than 25 Interrogatories, including all discrete subparts, shall be served by any party.
 - b) No more than 10 depositions shall be taken by any party.
 - c) No more than 150 Requests for Admission shall be served by any party.

C. EXPERT DISCOVERY

The parties anticipate that they will require expert witnesses at time of trial.

1. The Plaintiff anticipates calling 3 experts.
2. The Defendant anticipates calling 3 experts.
3. By 30 days after the close of fact discovery on May 1, 2013, the parties shall identify to the opposing party the experts who will provide a report that deals with the issues on which that party has the burden of persuasion.
4. On or before May 1, 2013, the parties shall exchange initial expert reports, which reports shall be in accordance with Fed.R.Civ.P. 26(a)(2)(B) ("Initial Expert Reports"). The Initial Expert Reports from each party shall deal with the issues on which that party has the burden of persuasion.
5. On or before June 1, 2013, Rebuttal Expert Reports shall be exchanged. Rebuttal Expert Reports shall also be in accordance with Fed.R.Civ.P. 26(a)(2)(B).
6. Anything shown or told to a testifying expert relating to the issues on which he/she opines, or to the basis or grounds in support of or countering the opinion, is subject to discovery by the opposing party.
7. Drafts of expert reports will not be retained and produced; Inquiry is not permitted into whom, if anyone, participated in the drafting of the report.
8. All expert discovery shall be completed by August 1, 2013.

D. DISCOVERY RELATING TO CLAIM CONSTRUCTION HEARING

- (1) Deadline for Plaintiff's Claim Chart: August 1, 2012.

Plaintiff's Claim Chart shall identify: (1) which claim(s) of its patent(s) it alleges are being infringed; (2) which specific products or methods of defendant's it alleges literally infringe each claim; and (3) where each element of each claim listed in (1) is found in each product or method listed in (2), including the basis for each contention that the element is present. If there is a contention by Plaintiff that there is infringement of any claims under the doctrine of equivalents, Plaintiff shall separately indicate this on its Claim Chart and, in addition to the information required for literal infringement, Plaintiff shall also explain each function, way, and result that it contends are equivalent, and why it contends that any differences are not substantial.

- (2) Deadline for Defendant's Claim Chart: September 1, 2012.

Defendant's Claim Chart shall indicate with specificity which elements on Plaintiff's Claim Chart it admits are present in its accused device or process, and which it contends are absent. In the latter regard, Defendant will set forth in detail the basis for its contention that the element is absent. As to the doctrine of equivalents, Defendant shall indicate on its chart its contentions concerning any differences in function, way, and result, and why any differences are substantial.

- (3) On or before October 1, 2012, the parties shall simultaneously exchange a list of claim terms, phrases, or clause that each party contends should be construed by the Court. On or before October 15, 2012, the parties shall meet and confer for the purpose of finalizing a list, narrowing or resolving differences, and facilitating the ultimate preparation of a joint claim construction statement. During the meet and confer process, the parties shall exchange their preliminary proposed construction of each claim term, phrase or clause which the parties collectively have identified for claim construction purposes.

At the same time the parties exchange their respective "preliminary claim construction" they shall also provide a preliminary identification of extrinsic evidence, including without limitation, dictionary definitions, citations to learned treatises and prior art, and testimony of percipient and expert witnesses that they contend support their respective claim constructions. The parties shall identify each such items of extrinsic evidence by production number or produce a copy of any such item not previously produced. With respect to any such witness, percipient or expert, the parties shall also provide a brief description of the substance of that witness' proposed testimony.

- (4) Following the parties' meet and confer described above, and no later than November 1, 2012, the parties shall notify the Court as to whether they request that the Court schedule a Claim Construction hearing to determine claim

interpretation. If any party believes there is no reason for a Claim Construction hearing, the party shall provide the reason to the Court.

At the same time, the parties shall also complete and file with the Court a joint claim construction statement that shall contain the following information:

- (A) The construction of those claim terms, phrases, or clauses on which the parties agree;
 - (B) Each party's proposed construction of each disputed claim term, phrase, or clause together with an identification of all references from the specification of prosecution history that support that construction, and an identification of any extrinsic evidence known to the party on which it intends to rely either in support of its proposed construction of the claim or to oppose any other party's proposed construction of the claim, including, but not limited, as permitted by law, dictionary definitions, citation to learned treatises and prior art, and testimony of percipient and expert witnesses.
 - (C) Whether any party proposes to call one or more witnesses, including experts at the Claim Construction hearing, the identity of each such witness and for each expert, a summary of each opinion to be offered in sufficient detail to permit a meaningful deposition of that expert.
- (5) A hearing on claim construction shall be held on or before January 15, 2013.

E. DISCOVERY RELATING TO VALIDITY/PRIOR ART

- (1) 45 days of its receipt of Plaintiff's Claim Chart, Defendant shall serve on Plaintiff a list of all of the prior art on which it relies, and a complete and detailed explanation of what it alleges the prior art shows and how that prior art invalidates the claim(s) asserted by Plaintiff ("Defendant's Prior Art Statement").
- (2) 30 days of its receipt of Defendant's Prior Art Statement, Plaintiff shall serve on Defendant "Plaintiff's Prior Art Statement", in which it will state in detail its position on what the prior art relied upon by Defendant shows, if its interpretation differs from Defendant's, and its position on why the prior art does not invalidate the asserted patent claims.
- (3) Plaintiff's and Defendant's "Prior Art Statements" can be, but need not be, in the form of expert reports.
- (4) Defendant can add prior art to its original Statement only by leave of the

Court.

F. OTHER DISCOVERY ISSUES:

(1) Protective Order Issues: June 15, 2012- ESI discovery plan.

(2) Discovery Definitions:

In responding to discovery requests, each party shall construe broadly terms of art used in the patent field (e.g. "prior art", "best mode", "on sale"), and read them as requesting discovery relating to the issue as opposed to a particular definition of the term used. Compliance with this provision is not satisfied by the respondent including a specific definition of the term of art in its response, and limiting its response to that definition.

G. MOTION AND TRIAL SCHEDULE

1. All non-dispositive motions shall be filed and served on or before the following dates:

(A) All motions that seek to amend the pleadings or add parties must be filed and served by August 1, 2012.

(B) All nondispositive motions and supporting documents, including those which relate to discovery, shall be filed and served by August 1, 2013. Nondispositive motions may be scheduled for hearing by calling Cathy Orlando, Calendar Clerk to Magistrate Judge Franklin L. Noel, 612-664-5110. All nondispositive motions shall be scheduled, filed and served in compliance with Local Rules 7.1, 37.1 and 37.2.

2. Dispositive motions be filed and served so they can be heard by October 1, 2013.¹ Counsel are reminded that they must anticipate the time required for scheduling this hearing by calling Calendar Clerk Sheri Frette at 612-664-5890.

3. Trial Ready Date

(A) The case will be ready for trial on or after February 1, 2014.

(B) Trial is estimated to late five trial days.

DATED: June 14, 2012.

s/ Franklin L. Noel
FRANKLIN L. NOEL
United States Magistrate Judge

¹Motions to exclude experts under Fed.R.Evid. 701-706 are deemed dispositive motions subject to the October 1, 2013, not the August 1, 2013, deadline.

Exhibit D

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA

| | | |
|--------------------------|---|------------------------------|
| 3M COMPANY and |) | |
| 3M INNOVATIVE PROPERTIES |) | Civil No. |
| COMPANY |) | |
| |) | |
| Plaintiff, |) | |
| |) | |
| vs. |) | <u>DEMAND FOR JURY TRIAL</u> |
| |) | |
| MOLDEX-METRIC, INC. |) | |
| |) | |
| Defendant, |) | |
| |) | |
| |) | |

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiffs 3M Company ("3M Co.") and 3M Innovative Properties Company ("3M Innovative Properties") (collectively, "3M") for their Complaint against Moldex-Metric, Inc. ("Moldex"), hereby allege and state:

PARTIES

1. Plaintiff 3M Co. is a corporation organized and existing under the laws of the state of Delaware, with its principal place of business at 3M Center, St. Paul, Minnesota.
2. Plaintiff 3M Innovative Properties is a corporation organized and existing under the laws of the state of Delaware, with its principal place of business at 3M Center, St. Paul, Minnesota.

3. On information and belief, Defendant Moldex is a corporation organized and existing under the laws of California, with its principal place of business at 10111 W. Jefferson Boulevard, Culver City, California, 90232.

JURISDICTION AND VENUE

4. This is a claim for patent infringement pursuant to 35 U.S.C. § 271 et seq. This Court has subject matter jurisdiction over 3M's claims pursuant to 28 U.S.C. §§ 1331 and 1338.

5. Moldex is subject to personal jurisdiction in this District. On information and belief, Moldex does business throughout the United States, including in this judicial district. Under the Minnesota Long Arm Statute, Minn. Stat. § 543.19, Moldex transacts business in Minnesota and/or has committed acts of patent infringement within and/or outside Minnesota that have caused injury in Minnesota.

6. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391 (b) and (c) and 1400(b).

3M'S PATENTS-IN-SUIT

7. On May 2, 2006, the United States Patent and Trademark Office duly and legally issued United States Patent No. 7,036,157 ("the '157 patent"). The '157 patent is entitled "Method Of Producing A Hood, And A Hood Produced According To The Method." A true and correct copy of the '157 patent is attached hereto as Exhibit A.

8. On June 6, 2000, the United States Patent and Trademark Office duly and legally issued United States Patent No. 6,070,693 ("the '693 patent"). The '693 patent is

entitled "Hearing Protector Against Loud Noise." A true and correct copy of the '693 patent is attached hereto as Exhibit B.

9. 3M Innovative Properties owns all right, title and interest to the '157 patent.

10. 3M Co. is the exclusive licensee of the '157 patent.

11. 3M Innovative Properties is the exclusive licensee of the '693 patent. 3M Co. manufactures and sells, pursuant to an exclusive sub-license, personal hearing protection products embodying one or more inventions described and claimed in the '693 patent, including COMBAT ARMS® earplugs.

12. 3M conducts and has conducted considerable research, development, and testing of personal hearing protection products to better address the problem of hearing loss. Because of these efforts, 3M's personal hearing protection products are recognized worldwide for optimum comfort, protection, and ease of use.

DEFENDANT'S INFRINGING ACTIVITIES

13. On information and belief, Moldex makes, uses, and/or offers for sale products that infringe at least one claim of the '157 patent, including at least products known as the "M Series" earmuffs. A true and correct copy of promotional materials for the "M Series" earmuffs is attached hereto as Exhibit C.

14. On information and belief, Moldex makes, uses, and/or offers for sale products that infringe at least one claim of the '693 patent, including at least the product known as the "Battleplug" earplug. A true and correct copy of materials depicting the "Battleplug" earplug are attached hereto as Exhibit D.

15. Moldex maintains a website at www.moldex.com. The Moldex website provides contact information to obtain information about Moldex products. The Moldex website also includes an online product catalog, which includes product information and a distributor locator for all Moldex products.

THE HARM TO 3M

16. Moldex has, by its infringing conduct, caused 3M irreparable harm for which there is no adequate remedy at law.

17. 3M has suffered damage as a result of Moldex's infringement to date.

18. This is an exceptional case under 35 U.S.C. § 285.

COUNT I: INFRINGEMENT OF THE '157 PATENT

19. 3M incorporates the allegations contained in the above paragraphs as though fully set forth herein.

20. Moldex has been and now is directly infringing, actively inducing others to infringe and/or contributing to the infringement of the '157 patent by making, using, selling and/or offering for sale products, including at least the "M Series" earmuffs, in violation of 35 U.S.C. § 271.

21. Moldex will continue to directly infringe, actively induce others to infringe and/or contribute to the infringement of the '157 patent unless and until Moldex is enjoined by this Court.

22. On information and belief, Moldex has been and now is contributing to and inducing infringement of the '157 patent by offering to sell and selling products intended to practice one or more claims of the '157 patent, including at least products known as

the "M Series" earmuffs. On information and belief, the infringing products are intended to be made or adapted for use in practicing one or more claims of the '157 patent, and the infringing products are not staple articles or commodities of commerce suitable for substantial non-infringing use. On information and belief, Moldex is and has been aware, through actual knowledge or willful blindness, that the infringing products would be used to practice one or more claims of the '157 patent.

23. Moldex's acts of infringement have caused and will continue to cause damage to 3M, and 3M is entitled to recover from Moldex the damages sustained by 3M and any additional remedy in an amount to be determined at trial.

24. Moldex's acts of infringement will continue to cause 3M irreparable harm in the future unless and until Moldex is enjoined from infringing the '157 patent.

25. 3M marked its products with the patent number of the '157 patent.

COUNT II: INFRINGEMENT OF THE '693 PATENT

26. 3M incorporates the allegations contained in the above paragraphs as though fully set forth herein.

27. Moldex has been and now is directly infringing, actively inducing others to infringe and/or contributing to the infringement of the '693 patent by making, using, selling and/or offering for sale infringing products, including at least the "Battleplug," earplug in violation of 35 U.S.C. § 271.

28. On information and belief, Moldex has been and now is contributing to and inducing infringement of the '693 patent by offering to sell and selling infringing products intended to practice one or more claims of the '693 patent, including at least the

product known as the "Battleplug" earplug. On information and belief, the infringing products are intended to be made or adapted for use in practicing one or more claims of the '693 patent, and the infringing products are not staple articles or commodities of commerce suitable for substantial non-infringing use. On information and belief, Moldex is and has been aware, through actual knowledge or willful blindness, that the infringing products would be used to practice one or more claims of the '693 patent.

29. On information and belief, Moldex will continue to directly infringe, actively induce others to infringe and/or contribute to the infringement of the '693 patent unless and until Moldex is enjoined by this Court.

30. Moldex's acts of infringement have caused and will continue to cause damage to 3M, and 3M is entitled to recover from Moldex the damages sustained by 3M and any additional remedy in an amount to be determined at trial.

31. Moldex's acts of infringement will continue to cause 3M irreparable harm in the future unless and until Moldex is enjoined from infringing the '693 patent.

PRAYER FOR RELIEF

WHEREFORE, 3M respectfully requests that this Court enter judgment in its favor and against Moldex, as follows:

1. To enter judgment that Moldex has infringed one or more claims of the '157 and '693 patents in violation of 35 U.S.C. § 271;
2. To enter orders preliminarily and permanently enjoining Moldex and its officers, agents, servants, employees, and attorneys, and all of those in active concert or

participation with them who receive actual notice of the Order, from infringing the '157 and '693 patents;

3. To award 3M its damages in amounts adequate to compensate 3M for Moldex's infringement of the '157 and '693 patents consistent with 35 U.S.C. § 284, up to and including treble the amount of actual damages assessed, together with costs, and prejudgment and post-judgment interest;

4. To declare this case to be "exceptional" under 35 U.S.C. § 285 and to award 3M its attorneys' fees, expenses, and costs incurred in this action; and

5. To award 3M such other and further relief as this Court deems just and proper.

JURY DEMAND

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, 3M requests a trial by jury on any and all issues on which a trial by jury is available under applicable law

Date: March 8, 2012

BARNES & THORNBURG LLP

By: 

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**ATTORNEYS FOR PLAINTIFFS
3M COMPANY and 3M INNOVATIVE
PROPERTIES COMPANY**

Exhibit E

United States Patent [10]
Hamery

[11] Patent Number: **6,070,693**
[45] Date of Patent: **Jun. 6, 2000**

[54] **HEARING PROTECTOR AGAINST LOUD NOISE**

[75] Inventor: Pascal Hamery, Mulhouse, France

[73] Assignee: Institut Franco-Allemand de
Recherches de Saint-Louis,
Saint-Louis, France

[21] Appl. No.: 09/233,192

[22] Filed: Jun. 20, 1999

Related U.S. Application Data

[62] Division of application No. 08/994,015, Dec. 18, 1997, Pat.
No. 5,936,208.

Foreign Application Priority Data

Sep. 18, 1997 [FR] France 97.11623

[51] Int. Cl. A61B 7/02

[52] U.S. Cl. 181/135

[58] Field of Search 181/130, 135;
128,861, 867; 2/209



[56] **References Cited**

U.S. PATENT DOCUMENTS

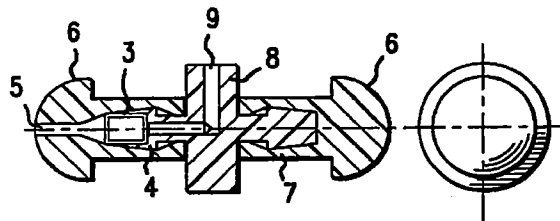
4,582,065 5/1986 De Boer et al.
4,652,083 8/1989 Killian
5,113,967 5/1992 Killian et al.
5,824,068 10/1998 Packard et al. 181/131

Primary Examiner—Khanh Dang
Attorney, Agent, or Firm—Ogilvy & Berridge, PLC

[57] **ABSTRACT**

The invention relates to a hearing protector for attenuating, selectively or not, noises that can have an intensity of up to 190 dB, designed to be inserted in sealing fashion into the auditory canal. The hearing protector includes a flexible cylindrical body that has a ferrule at each end. At least one of the two ferrules has a channel that runs from one end of the ferrule to the center of the cylindrical body and contains an acoustic filter. When the two ferrules each contain an acoustic filter, the filters may or may not be identical.

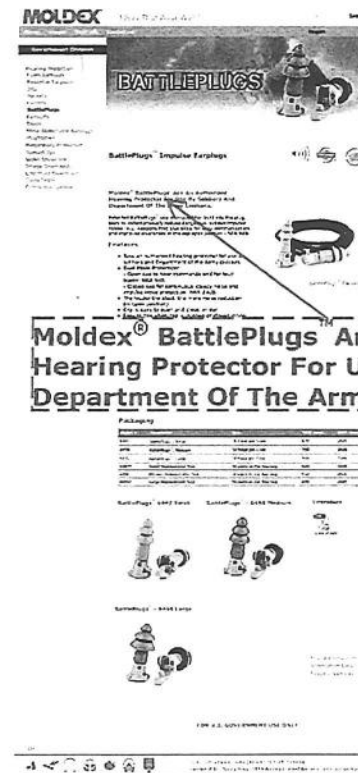
17 Claims, 3 Drawing Sheets



MOLDEX®

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs are hearing protectors.



<http://www.moldex.com/government-division/hearing-protection/reusable-earplugs/battleplugs.php>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

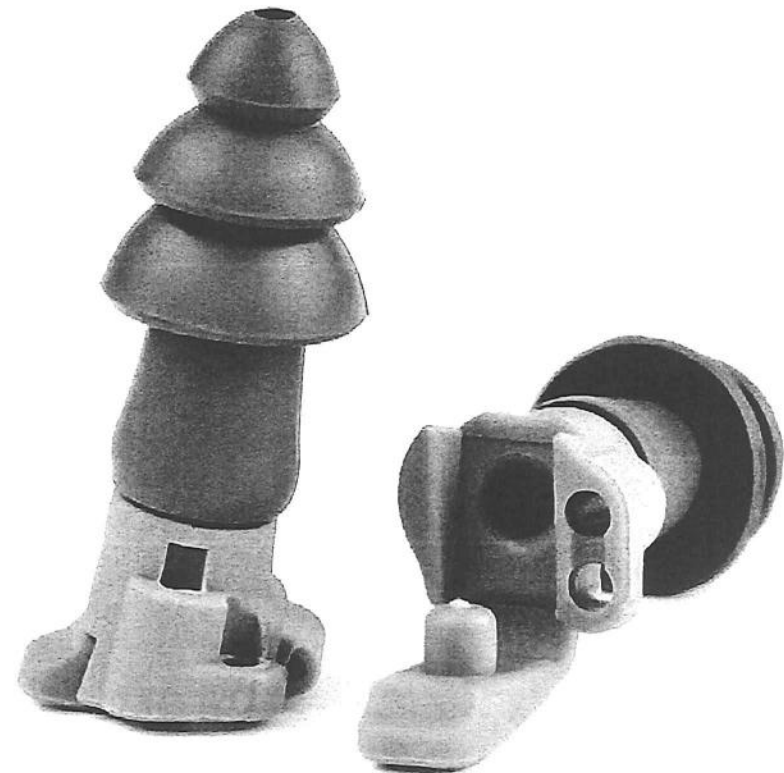
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs are clearly capable of selectively or automatically reducing noises, which would include noises having intensities at least up to 190 db.



<http://www.moldex.com/pdf/datasheets/battleplugs-datasheet.pdf>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

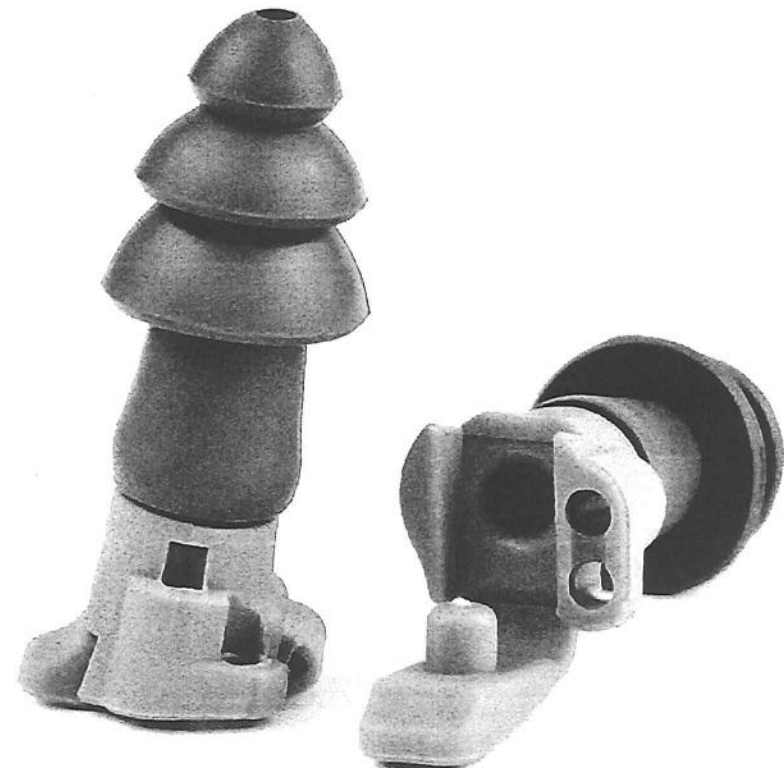
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs are hearing protectors for selectively or automatically reducing noises having intensities up to 190 dB.



<http://www.moldex.com/pdf/datasheets/battleplugs-datasheet.pdf>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs are intended to be sealingly inserted into an ear of a user.

B. Reach over the head and pull top of ear upwards (Fig 2).

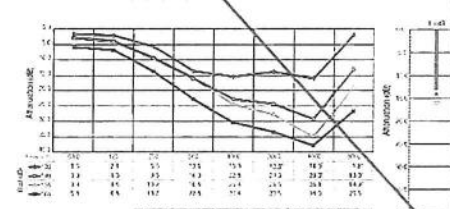
IC. With other hand grasp plug handle and gently push and wiggle into ear canal until a good and comfortable seal is made.

1. To insert plug with ease, reach over the head and pull up on the top of the ear (Fig. 2).
2. With other hand grasp plug handle and gently push and wiggle into the ear canal until a good and comfortable seal is made.

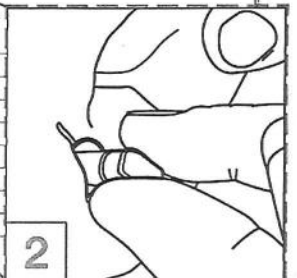
Easy to open and place in ear. Easy to see which mode is currently used.



Blast protection data (cup open position). The following table shows the results of tests performed on the BattlePlug.



*Values are represented by the energy in amplitude at these frequencies.
Left ear tests are performed at 100 Hz. Right ear tests are performed at 200 Hz.



<http://www.moldex.com/pdf/datasheets/battleplugs-datasheet.pdf>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

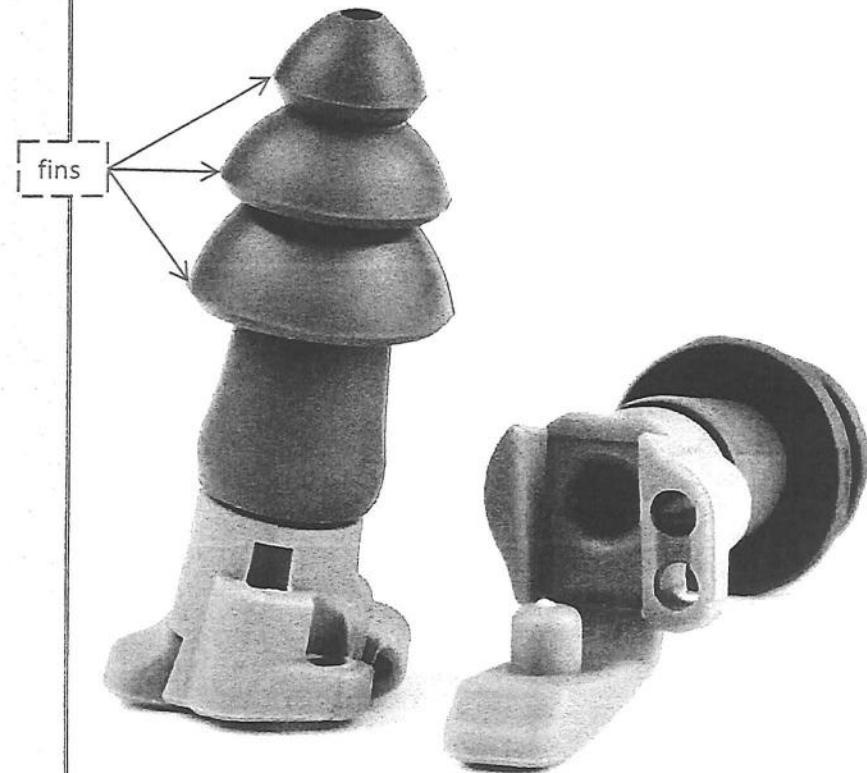
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs include fins that are clearly designed to facilitate sealing against the auditory canal.



<http://www.moldex.com/pdf/datasheets/battleplugs-datasheet.pdf>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

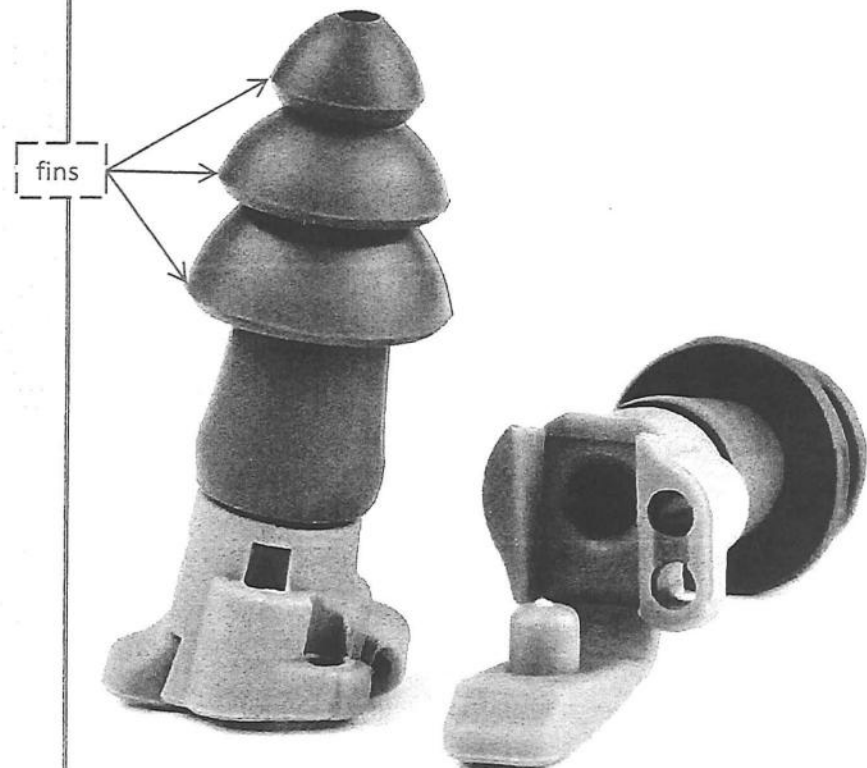
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs are hearing protectors intended to be sealingly inserted into an auditory canal of a user.



<http://www.moldex.com/pdf/datasheets/battleplugs-datasheet.pdf>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

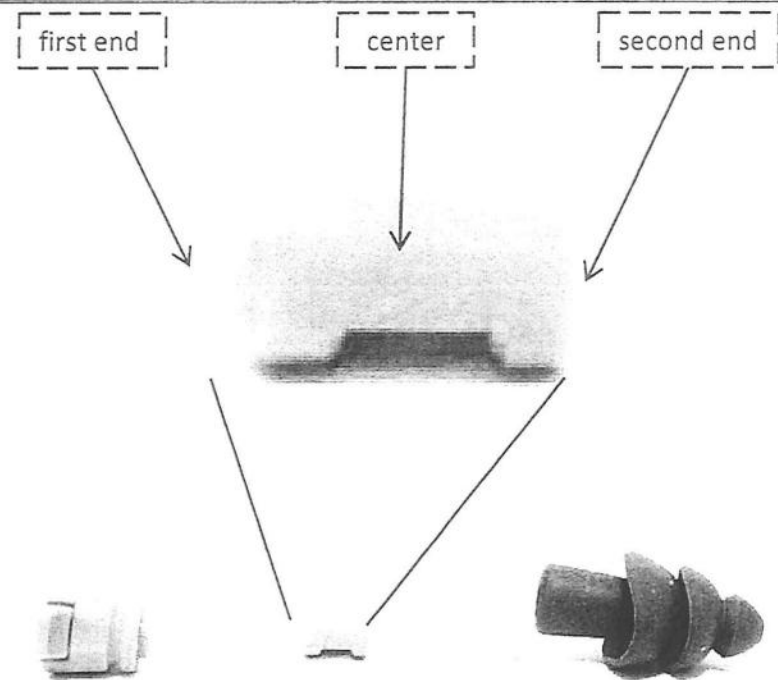
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs include a portion having a cylindrical body. The portion has a center, a first end and a second end.



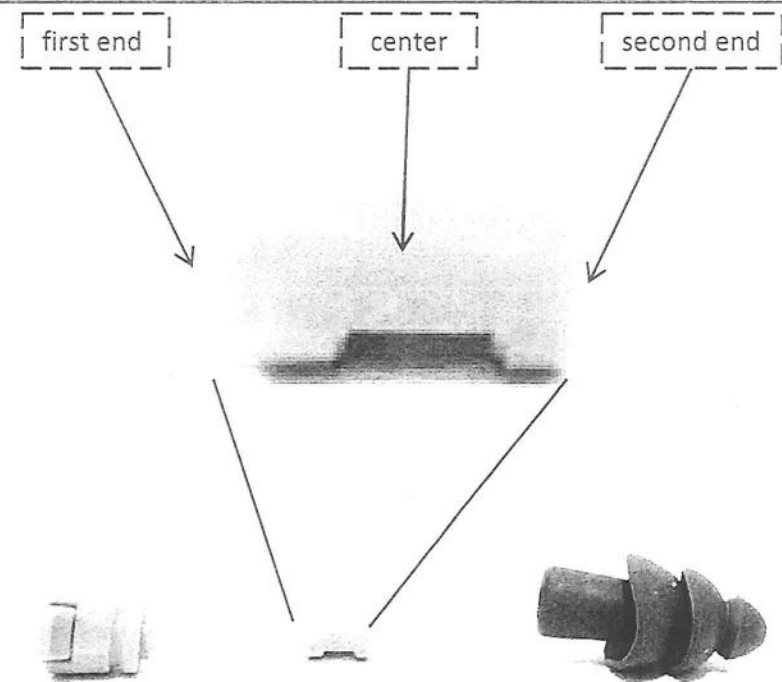
Photograph of portions of a Moldex BattlePlug

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,
the hearing protector being intended to be sealingly inserted into an auditory canal of a user,
the hearing protector comprising:
a cylindrical body having a center, a first end and a second end;
a channel extending from said first and second ends to said center of said cylindrical body; and
said channel containing a first acoustic filter and a second acoustic filter,
each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs include a cylindrical body having a center, a first end and a second end.



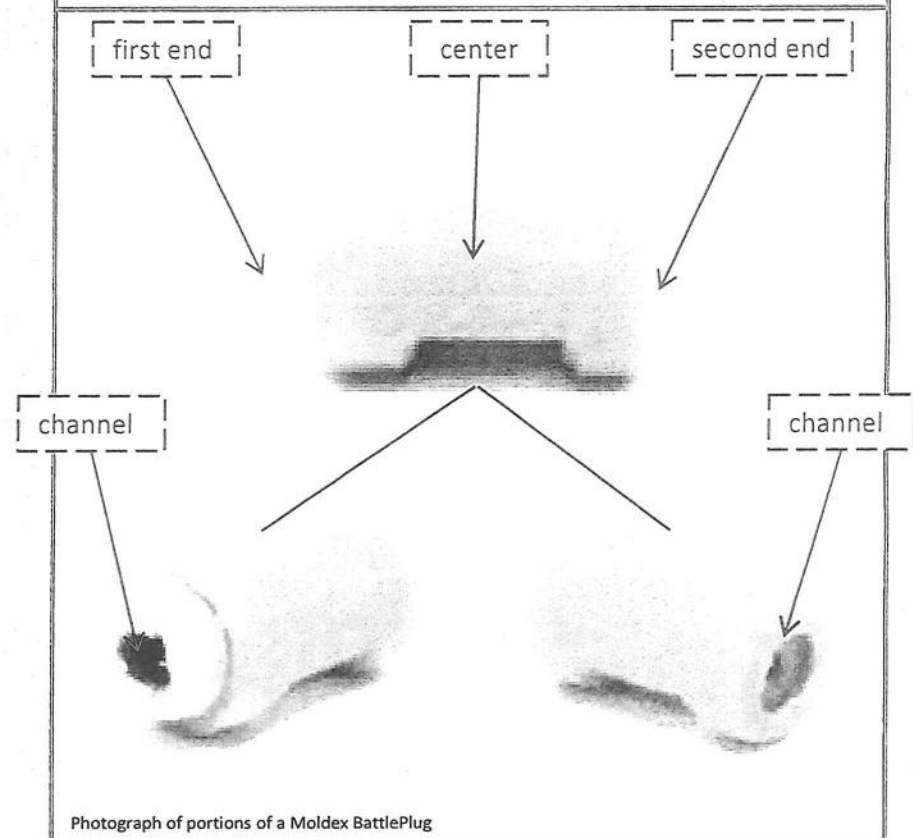
Photograph of portions of a Moldex BattlePlug

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,
the hearing protector being intended to be sealingly inserted into an auditory canal of a user,
the hearing protector comprising:
a cylindrical body having a center, a first end and a second end;
a channel extending from said first and second ends to said center of said cylindrical body; and
said channel containing a first acoustic filter and a second acoustic filter,
each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs have a channel that extends from the first end of the portion through the center to the second end.



Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

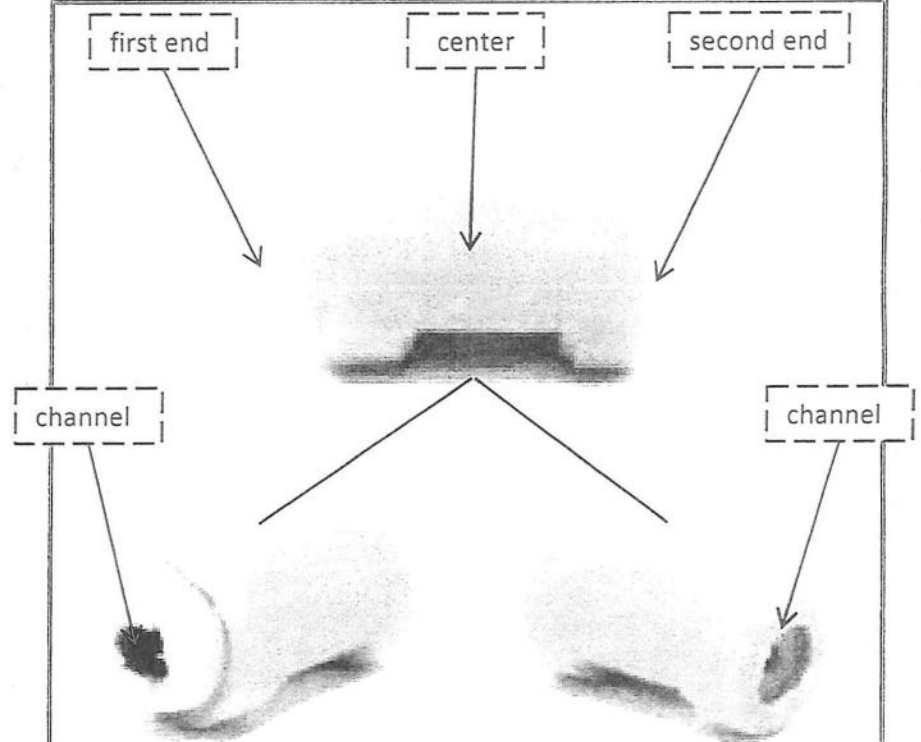
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs include a channel extending from the first and second ends to the center of the cylindrical body.



Photograph of portions of a Moldex BattlePlug

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

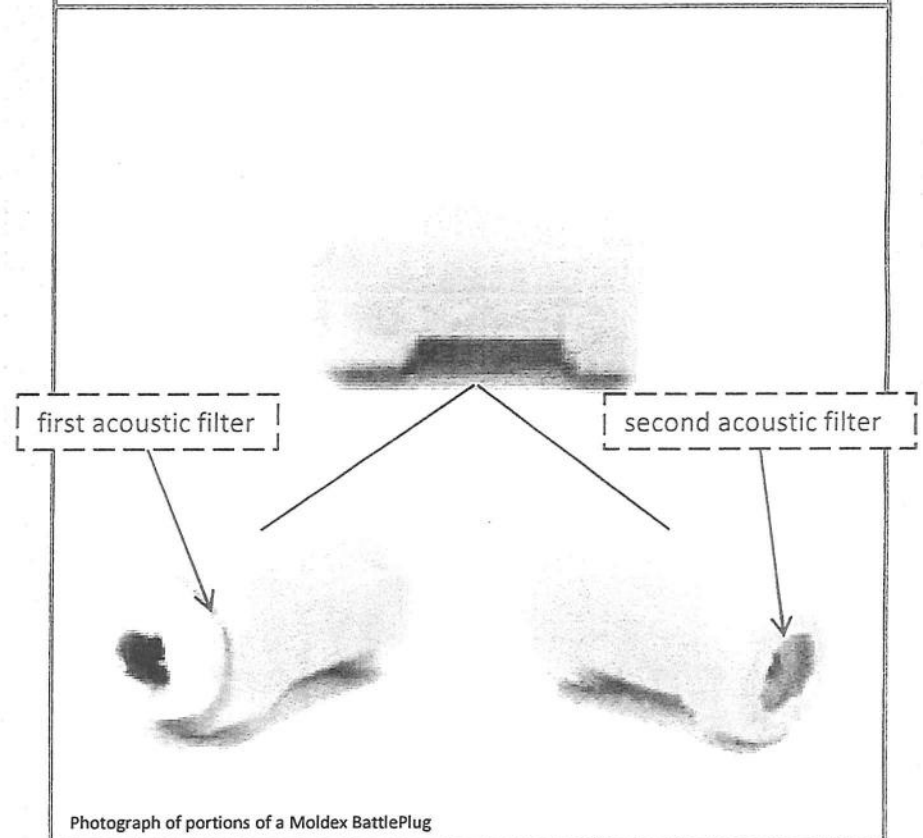
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Moldex BattlePlugs have a first acoustic filter (a first narrow constriction of the channel) and a second acoustic filter (a second narrow constriction of the channel).

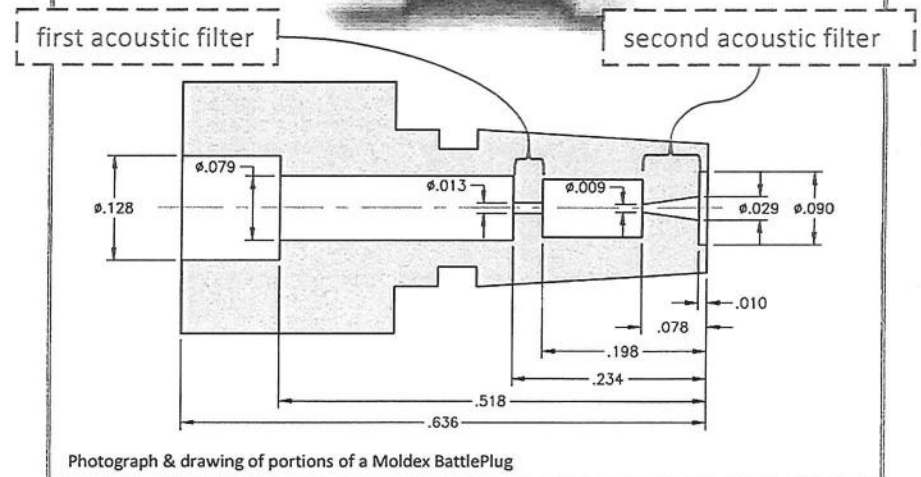


Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,
the hearing protector being intended to be sealingly inserted into an auditory canal of a user,
the hearing protector comprising:
a cylindrical body having a center, a first end and a second end;
a channel extending from said first and second ends to said center of said cylindrical body; and
said channel containing a first acoustic filter and a second acoustic filter,
each of said first and second filters being in communication with one of said first and second ends.

The acoustic filters can be better seen in a drawing of a Moldex BattlePlug. The first acoustic filter includes the cylindrical constriction and its two ends. The second acoustic filter includes the conical constriction and its two ends.



Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

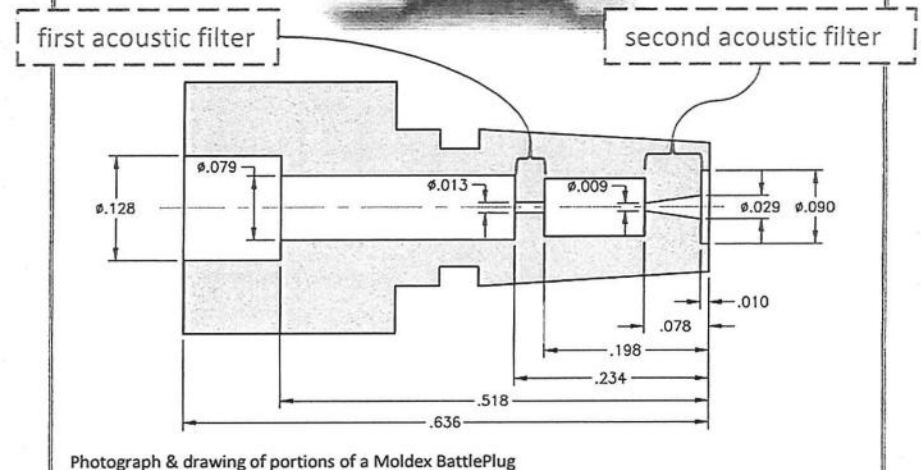
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs include a channel containing a first acoustic filter and a second acoustic filter.

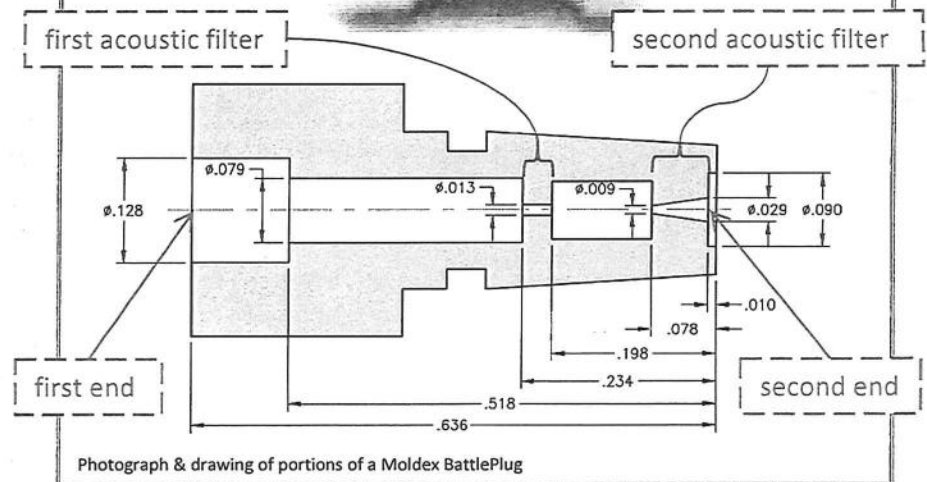


Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,
the hearing protector being intended to be sealingly inserted into an auditory canal of a user,
the hearing protector comprising:
a cylindrical body having a center, a first end and a second end;
a channel extending from said first and second ends to said center of said cylindrical body; and
said channel containing a first acoustic filter and a second acoustic filter,
each of said first and second filters being in communication with one of said first and second ends.

The first acoustic filter is open to (and therefore "in communication with") the first end and the second acoustic filter is open to (and therefore "in communication with") the second end.



Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 1:

A hearing protector for selectively or automatically reducing noises having intensities up to 190 dB,

the hearing protector being intended to be sealingly inserted into an auditory canal of a user,

the hearing protector comprising:

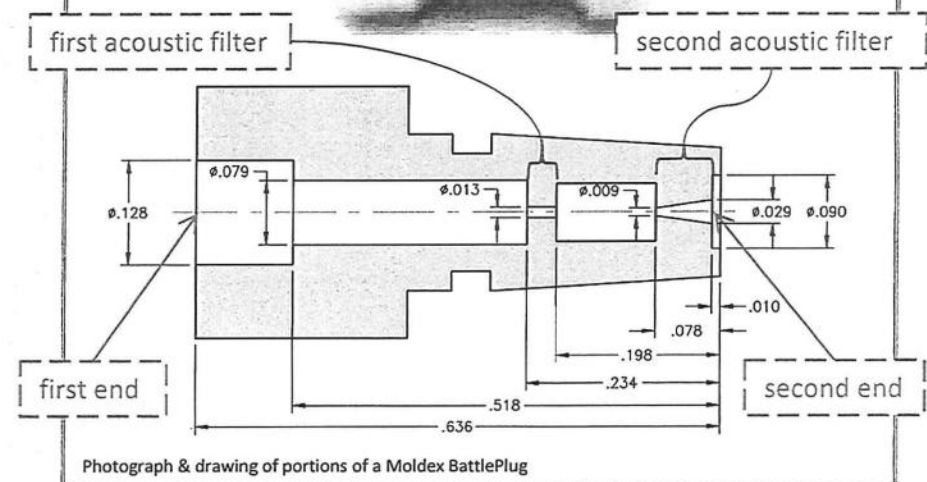
a cylindrical body having a center, a first end and a second end;

a channel extending from said first and second ends to said center of said cylindrical body; and

said channel containing a first acoustic filter and a second acoustic filter,

each of said first and second filters being in communication with one of said first and second ends.

Therefore, Moldex BattlePlugs include a channel containing a first acoustic filter and a second acoustic filter, each of the first and second filters being in communication with one of the first and second ends.



Because Moldex BattlePlugs satisfy each of the limitations of Claim 1, Moldex BattlePlugs infringe Claim 1.



Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 3:

The hearing protector according to claim 1,
wherein said first and second acoustic filters are not identical.

Moldex BattlePlugs are hearing protectors according to claim 1.
[See Claim 1 above.]

MOLDEX BattlePlugs

BATTLEPLUGS

BattlePlugs™ Reusable Earplugs

Features:

- Reusable hearing protector for use by individuals and groups of people in noisy environments.
- Provides excellent sound attenuation and noise reduction.
- Available in three sizes: Small, Medium, and Large.
- Made of soft, pliable material for comfort and ease of use.
- Can be used in noisy environments for extended periods.
- Easy to insert and remove.
- Available in three sizes: Small, Medium, and Large.

Packaging:

| Size | Quantity | Weight |
|--------|----------|--------|
| Small | 100 | 0.10 |
| Medium | 100 | 0.10 |
| Large | 100 | 0.10 |

BattlePlugs™ Reusable Earplugs

Small, Medium, Large

FOR A FULL LIST OF SIZES, VISIT US AT:

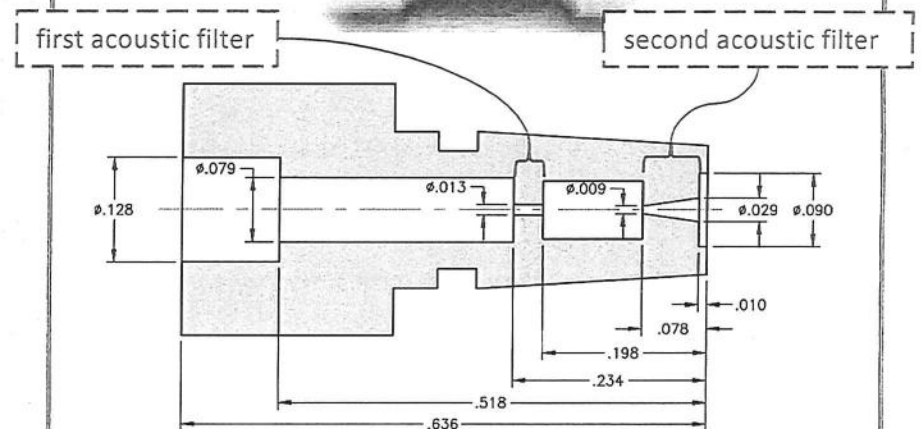
<http://www.moldex.com/government-division/hearing-protection/reusable-earplugs/battleplugs.php>

Comparison of U.S. Patent No. 6,070,693 with Moldex BattlePlugs

Claim 3:

The hearing protector according to claim 1,
wherein said first and second acoustic filters are not identical.

The first and second acoustic filters of Moldex BattlePlugs are different dimensions.



Photograph & drawing of portions of a Moldex BattlePlug